Loftware Label Manager

User's Guide

LOFTWARE, INC.

Global Marking Solutions for Enterprise Applications™

Barcode Label Printing Software and Integration Solutions for PCs, Networks, Mid-Range and Mainframe Computers

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Internet Website: www.loftware.com

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Introduction to Loftware

About Loftware

Since 1986, Loftware has been providing world-class bar code labeling systems to virtually every industry. From our earlier stand-alone label design and printer workstation products to our modern "Server and Web Centric" based client/server/Internet technologies, Loftware continues its industry leadership position in developing the most advanced systems tools and labeling solutions available on the market today.

Open System Technology that Protects Your Labeling System Investment

Loftware's printing software platforms are designed for maximum flexibility and maintainability. As labeling, computer and business requirements change, so can we. This not only ensures that your initial investment is protected but guarantees that future reinvestments will not be necessary. Loftware's platforms also allow for incredible add-on growth, extendibility and scalability. Add and mix different types of printers, print from "thin" network and Internet client printing workstations or roam and print using mobile wireless devices. Print in "stand-alone" mode or integrate printing directly with enterprise business applications such as SAP, Oracle, Baan, JD Edwards operating across LANS, WANS, and the Internet. Because our technology is application independent, any business application can take full advantage of our printing rich platforms without the need for writing extensive custom-built applications or communication interfaces.

With little effort, ERP and WMS systems as well as any other application requiring bar code-printing output can take advantage of Loftware's state of the art printing platforms.

Early in 2003, Loftware, Inc. made available the Oracle® Connector, which is a new connectivity module bridging Loftware's current enterprise bar code printing technology to Oracle® applications 8i and above. In mid-2003, Loftware released the first International Edition, allowing users to run Loftware applications in English, French, German, or Spanish.

Today, Loftware is once again ahead in the area of encoding RFID smart labels and tags. Extending its RFID capabilities, Loftware has developed its RFID Reader Module (RRM), an optional component of the Loftware Print Server, that allows reading and writing of passive RFID tags with different brands and models of RFID readers. This fast-growing technology is becoming a "must-have" requirement for many suppliers, food vendors, healthcare facilities, and others.

Industry Experience

Loftware is an engineering and support based company, and has highly trained professionals with the experience you need to understand the essential elements of implementing a successful bar code printing system. We have the knowledge in what works and what does not work in real world situations; so please call and speak to our systems analysts and technicians before making a decision!

Loftware's Mottos

Remember…

"If you CAN'T print labels, you CAN'T ship products!"

"Bar Code Labels are not just labels, but actual information carriers of your company's data."

"Global Supply Chains start with the label!"

"Never underestimate the complexity or cost associated with implementing a flexible, maintainable and scalable enterprise labeling solution."

Loftware's User's Guides

The Loftware Label Manager User's Guide offers basic information about label creation and printing, including:

- Label design
- Bar Code
- Device Connections
- RFID Field Encoding
- RFID Smart Label Printing
- On-Demand Printing
- Templates and Wizards
- Double-byte Character Sets
- Databases and ODBC
- Batch and Range Printing

For users who are already knowledgeable about label-printing, a more advanced Loftware Print Server User's Guide is available. The Advanced Guide contains information about:

- Loftware Print Server
- Thin Clients
- Internet Printing
- LPS Clustering
- Internet and Client ActiveX Controls
- .NET Control

Documentation on Loftware's new Reader Control is available in PDF format on the RRM installation CD.

New Versions! – Because deadlines require our User's Guides to be compiled before all the possible software changes have been completed for a release, it is always suggested that you visit our Website for the latest revisions to our documentation. Also, visit the Loftware Knowledge Base for additional information and tips on a variety of subjects!

Contacting Loftware

Sales and Customer Service

The Loftware's Sales and/or Customer Service Departments are available for product information, quotes, and placing orders Mon.-Fri., between 8:00 AM and 5:00 PM Eastern USA Time. E-mail and faxes can be received 24-hours a day.

Phone: 603-766-3630 (follow the phone prompts for Customer Service or Sales)
Fax: 603-766-3631
E-Mail: sales@loftware.com or customerservice@loftware.com
web: www.loftware.com

Technical Support

Please refer to the following section entitled "Technical Support Policies."

Fax Machine

Loftware's fax machine is available 24-hours a day for submitting requests to Sales, Customer Service, Technical Support, or to our System Analysts.

Fax: 603-766-3631

Traditional Mail

If you need to contact us via traditional mail, FEDEX, UPS, and/or other mail service carriers, please use Loftware's shipping address listed below:

Loftware, Inc.
166 Corporate Drive
Portsmouth NH 03801
U.S.A.

Technical Support Policies

Software licenses purchased directly from Loftware on or after April 2, 2002 include the first year of Technical Support. This initial 12-month support period starts on the day the product was shipped and invoiced from Loftware's factory. When needed, support recipients during this period are eligible to receive unlimited telephone support, access to software upgrades and enhancements and speak with our Systems Analysts.

Note: *In order to have access to software upgrades and enhancements, it is a requirement that all currently owned Loftware software licenses are either first upgraded and/or placed under a Support Contract.*

Premium Annual Support Contract

To ensure uninterrupted telephone support as well as access to the latest software upgrades and enhancements, make sure all your software licenses remain under a Loftware Support Contract. Please refer to Loftware's Internet Website for additional information on this very important topic, or if you prefer, call Loftware's Customer Service Department for a Support Services brochure.

During the initial one-year Support Contract period, Contract Subscribers have access to the following services:

- Unlimited Technical Support Incidents
- Access to Loftware's Professional Services Group
- Automatically eligible to download software upgrades and enhancements from Loftware's Internet website
- Automatic e-mail notification when new versions of software become available
- When necessary, access to senior Loftware technical support staff, via phone and e-mail
- Guaranteed software license replacement for accidentally damaged or malfunctioning hardware keys

What defines an "Incident"?

A technical support incident is defined as contacting our support staff using any medium (phone, fax, or email) for the purposes of obtaining help with a Loftware product.

Depending on its complexity, an incident may involve several calls back and forth with our technicians before it is marked as "closed."

Multiple incidents cannot be "stacked" into one request. Whether or not a request involves multiple incidents is a judgment call on the part of our technical staff.

Each incident is logged against a unique software license serial number. This is why you must register all purchased copies of the software before support can be given.

Note: *If it is determined that a particular request involves a problem with the software or is not properly documented, it is not counted as an incident. This is a judgment call on the part of our technical staff.*

Before Calling Support

Loftware has highly trained technicians available to help you with your labeling system. Technical support calls ***are not*** accepted until ***all*** of the following requirements are met:

1. Your product is registered. If you have not registered your software, you may do so at loftware.com/index.cfm/Support/Product_Registration or via fax by using the form included with your software.
2. There is a Support Contract in place that covers the specific license in question or a technical support incident has been purchased for that particular incident (described above).
3. Have your serial number and version number of the product you are using ready. These numbers can be obtained by accessing the *Help|About* menu of the label design mode.

4. You have checked the user's guide(s) for your answer. If you do not have the User's Guides, both of the guides or various chapters of each can be downloaded in pdf format from our web site, or read on-line.

5. You have checked the Loftware's Knowledge Base articles on our website. Hundreds of frequently asked questions and typical problems are documented there in easy to read articles.

6. If you suspect that your problem is hardware related, try to first determine if it is a problem with your PC, Network, or printer and contact the appropriate company. Loftware does not sell or service any hardware products.

7. Think about how you are going to efficiently explain the problem prior to speaking with a technician. The better the description, the quicker the solution and or resolution to your problem.

8. If this is a follow up call to a previous incident, please have the incident number ready.

Phone: 603-766-3630 (follow the prompts to Technical Support)
Fax: 603-766-3631
E-mail: support@loftware.com

Warranty Information

Current product warranty information is available under the Purchase section found at www.loftware.com.

The Professional Services Group

Systems Analysts

Loftware's Professional Services Group offers *"without a charge"* pre-sales printing systems analysis and telephone consulting services to all companies interested in deploying a Loftware printing solution. If you are a MIS director, IT Manager, or Systems Programmer and have advanced questions on how to best proceed with the design, integration and implementation of a labeling system, we encourage you to contact one of Loftware's PSG Systems Analyst consultants.

The System Analyst is a special added-value service we have developed to help ensure maximum success in integrating our applications with yours. Our Analysts have the real world experience you need to make the right choices early on in your project.

Remember, setting up a labeling system is not an easy task even for the very experienced professional. Assistance 'up front' from experts in the field goes a long way in reducing project times and costs.

PSG On-Site

PSG's Systems Consultants and implementation experts are also available after the sale to come on-site and offer assistance with installation, system configurations (software/hardware), troubleshooting network and printer configuration issues. This is a fee-based service and is available upon request.

Evaluation Stage

Please call the PSG Group even if you are in the evaluation stages—they are always there to help guide you in making the correct decisions. To reach the PSG Group by phone call 603-766-3630 or email the Analyst at analyst@loftware.com. For more in-depth information on PSG and the other services they provide please visit the Loftware's Internet website at http://www.loftware.com.

Loftware Licensing

The Loftware Print Server Editions are licensed in similar ways with a few exceptions. Each product comes standard with a certain number of printer and client seats. You may add to your overall device seats, RFID printer seats, or client seats at the time of your initial purchase or add seats 'on-the-fly' later via a phone call to Loftware's Customer Service department. Please consult the licensing section of the Loftware website, www.loftware.com, for up-to-date information on how our products are licensed. Refer also to the License Information and Registration section of this guide.

Chapter 1 Installation

General Installation Information

Internet Downloads

All Loftware programs may be downloaded directly from the Loftware Website. Once downloaded, it is a straightforward matter to install. Simply run the self-expanding .exe file and the setup program runs. There are two types of Internet downloads: Demo Versions and Product Upgrades.

Evaluations and Demo Mode Limitations

If you have downloaded from the "Free Demo Online" link, the software is tagged as **Web Eval** only. This means that the downloads never recognize a Hardware License Key or Password.

Do not try to upgrade existing software with an evaluation version!

The only other limitation of the demo software is that data characters are changed on the printed label. For example, "Blue Widget" may print as "Slue Figes." After purchasing a "live" copy, install over the evaluation copy; your label files come forward and your data is no longer altered.

Upgrades

If you are under a support contract, or have purchased an upgrade, you are given a password to access the "Upgrades" link on our web site. This is **live** software and may be installed over existing versions for the purpose of upgrading to the latest version. You may also update your system with a CD-ROM if you request that we send you one.

Service Packs

Service Packs are small installs that are current updates to your Loftware Version. The Service Packs are available on the Loftware Website under Download Central and they are **version specific**. This means that the Service Pack *must* match the version of Loftware on the PC, or it cannot be downloaded. Service Packs (or Updates) do not install all the files that were included in your FULL (original) install; therefore, do NOT attempt to run Loftware with just the Service Pack!

***Note**: If you are upgrading from LLM-DOS OR LLM-WIN16, refer to Appendix D for important information before proceeding with the setup process.*

Minimum System Requirements

For "Stand-Alone" Printing

If you are not using the Loftware Print Server, the following table shows the minimum requirements:

Windows OS	Processor Speed	Memory	Disk Space
2000	PII-266 MHz equiv. or higher	128 MB	128 MB
XP	PII-300 MHz equiv. or higher	256 MB	256 MB
2003	PII-300 MHz equiv. or higher	256 MB	256 MB

*As of August 1, 2003, Loftware has stopped support of Loftware products operating on a Windows® 95 system. Please be aware that users currently using Windows® 95 must upgrade their operating system to Windows 2000/XP or higher before they may upgrade their Loftware solution.

*As of March 1, 2005, Loftware has stopped support of Loftware products on Windows 98, Windows 98 SE, Windows NT4, and Windows ME (Millennium Edition). This limitation applies to all product versions, including versions originally designed to run under these operating systems.

These operating systems are at the end of their life as defined by Microsoft Corporation. (Please refer to the Microsoft website for information.) Customers running Loftware solutions on these operating systems are encouraged to upgrade to a supported operating system. As of Loftware version 8.1, these operating systems are not tested and cannot be installed to.

For Loftware Print Server

For those using the Loftware Print Server, the following table displays the minimum requirements for successful printing. These requirements include information on the 'LPS Load,' meaning how many printers you are driving, an important consideration when using the LPS.

Min. WIN OS	Processor Speed	Memory	Disk Space
2000/XP/2003	P3-450 MHz	256 MB	256 MB
LPS LOAD	# of Printers	Memory	Disk Space
Low	Less than 20	256 MB	256 MB
Medium	20-50	256-512 MB	256-512 MB
High	50-250+	512+ MB	512+ MB

As load increases, memory, processor power and the number of processors may need to be adjusted. See the 'Performance Considerations' section of the LPS chapter in the LPS guide for more information. When in doubt, remember that a Loftware analyst will be able to help you.

Installation Overview

The Loftware suite of programs includes several setup programs. Each setup is used for a particular purpose. Usually, you only have to be concerned with the Main Setup Program, which is located in the root directory of the CD-ROM.

Note: *Visit the Loftware website for information on all Loftware products and their required licensing.*

Main Setup Program

The main setup program is used for local installs of all Loftware Programs, including the Loftware Print Server and all of its clients. The modules that are available for use after you run setup depend on the licensing model you have purchased. When the main setup program is run, the following components are installed:

√ Loftware Label Manager Design, On Demand, Batch, and Range Print programs.

√ Microsoft 32 Bit ODBC Drivers for dBase, FoxPro, SQL Server, Access, ASCII Text, and Excel

√ All sample programs, help files, and compliance labels

If you choose 'yes' to the "Initialize Loftware Print Server?" question, the following additional components are installed:

√ Thin Client setup program

√ Loftware Print Server

√ Thin On-Demand Print Client

√ Status Client

√ Notification Agent

√ ActiveX Client Control

√ Internet ActiveX Control

√ Web Listener

√ Web On Demand Print Client

Note*: The .NET control has a separate installation that can be found on the Loftware CD.*

The Loftware RFID Reader Module has a separate installation that can be found on the RRM CD.

LPS Client Setup

The Client Setup program installs client programs for the Loftware Print Server (LPS). Unlike the main setup program, only the client that you choose is installed, thus keeping the client computer

easier to manage. The Client Setup program can be found on the Loftware CD. It is also part of the "Loftware Labeling" directory tree after doing a main install. Simply share the "LPS Client Install" directory, and all LPS client installs are available across your network. When this setup is launched, it gives you the choice to install one or a combination of the following:

√ Thin On-Demand Print Client

√ Status Client

√ Notification Agent

√ ActiveX Client Control

√ Internet ActiveX Control

√ Web On-Demand Print Client

√ Web Listener

***Note**: The .NET control has a separate installation that can be found on the Loftware CD.*

LPS Web Client Setup

This is a small setup program that can be hosted on a web site for the purposes of making the LPS web clients available to your users over the Internet. Web users download the file (about 2.5M) and run the setup. Any combination of the following may be installed:

√ Internet ActiveX Control

√ Web On-Demand Print Client

√ Web Listener

RFID Reader Module

The Loftware RFID Reader Module (RRM) is an optional component of the Loftware Print Server that provides the capability of reading and writing of passive RFID tags using RFID readers. Separate installations can be found on a separate CD for the Loftware RFID Reader Module, the Loftware RFID Simulator, and the Loftware Reader Control. Refer to the *Loftware RFID Reader Solutions User's Guide* for instructions.

Installation Modes

The setup program has four modes: First Install, Repair/Reinstall, Uninstall, and Upgrade. Setup automatically senses the mode it needs to be running in. It is important that you understand the function of each of these modes.

First Install

If this is a first time installation, setup prompts you for the installation path for Loftware. The default is C:\Program Files\Loftware Labeling. We recommend that you choose the default.

If this is an upgrade of version 4.x and below, the default is the directory in which the older version resides. This is usually C:\Program Files\LLMWIN32. At this point, the Loftware Programs are installed on your PC for the first time.

Repair/Reinstall

If you run setup.exe for a second time after a successful install, you are not prompted for the destination directory. You are instead prompted on whether or not you want to Repair (Reinstall) or Remove (Uninstall). Choosing the 'Repair' option causes setup to overwrite the Loftware files that were previously installed. Note, however, that your labels, layouts, serial files, images, etc., ***are not*** deleted.

Remove (Uninstall)

Two methods can be used to remove or uninstall the Loftware Programs. As described above, you are prompted to uninstall whenever you run setup.exe after the first successful install.

The Loftware Programs can also be uninstalled in the classic Windows fashion by using the *Add/Remove Programs* applet in the Windows Control Panel. Select 'Loftware Programs' and click *Add/Remove*.

In both cases, all application files, Windows System files and registry entries related to Loftware Label Manager and the Loftware Print Server are removed. Files and registry settings created after the install process such as labels, serial numbers, and layouts, etc., are not removed. After uninstalling, delete the Program Files\Loftware Labeling directory if you no longer want to save the work you did while the program was installed. Also, some Windows\System files are not removed if they are shared with other programs.

Note*: The only way to install to a directory other than the original one is to uninstall the product first. After uninstalling, setup runs in 'First Time' mode and prompts you for the new directory. You may not have the Loftware Products installed in more than one directory.*

Upgrade

If you have purchased an upgrade that is a newer version than the one you have installed, it upgrades your older files to the newer version. You are not given the chance to install to a separate directory.

***Note**: If you are installing to a Cluster machine for the first time, uninstall your current Loftware Products first! See the Loftware Print Server Clustering chapter of the LPS User's Guide for important information regarding Cluster installation.*

Note to ODBC Users: During installation of a Loftware upgrade, the schema.ini file located in the \loftware labeling\dbases\ folder is overwritten. The schema.ini file is used by ODBC for connectivity to text files. Several text files can share one schema.ini file, but there can only be one such file per folder. Because Loftware supplies sample text files for ODBC, the upgrade installation must update, and therefore overwrite, the schema.ini file located in the \loftware labeling\dbases\ folder. It is therefore recommended that if you are using text files with ODBC, use a folder other than the \loftware labeling\dbases\ folder.

Installation Instructions

Before you start

- If you are installing to a cluster, refer to the Clustering chapter in the Advanced Users Guide.
- If you are installing to a Windows Terminal Server or Citrix, refer to the Terminal Server Section discussed later in this section.
- Be sure that you logon to your system locally with Administrative privileges.
- Remove any hardware license key in the LPT (parallel) port or USB Port.

Launch Setup

1. Place the CD in your CD-ROM drive, and wait for autorun to launch the setup program.

   If autorun does not run, you may invoke '**setup.exe**' in the root directory of the CD-ROM. If installing to Windows Terminal Server, please read the following section.

   Setup leads you through a few simple prompts. The prompts are different depending on the mode that setup is in, as described previously.

2. At the end of the install, you are asked if you want to initialize the Loftware Print Server for use.
3. Choose 'No' if you are simply using Loftware Label Manager and do not intend on using the LPS. However, if you choose 'yes,' you may run the LPS in Demo mode to see how the LPS works!
4. If you choose 'Yes,' be sure to follow the information below on 'Initializing the LPS.'
5. Regardless of your choice, if locked files are detected during install, you are prompted to reboot. If you see this prompt, you must reboot. Unpredictable program behavior that is very difficult to troubleshoot occurs if you choose not to reboot.

Initializing the Loftware Print Server (LPS)

If you have chosen to initialize the Loftware Print Server, very important information regarding services will be displayed. The information on the Services screen explains the rules for setting up services. Its contents are important and reprinted below for clarity:

```
Important Information

You have elected to install the Loftware Print Server (LPS) service.  The
Loftware Notification Agent (LNA) service will be installed as well.  Be
sure to adhere to the following rules:

1. The 2000/2003 operating systems require a password for the Account that
the LPS will run under.  This account must belong to the Local
Administrators group.  If you are not logged onto the account that the LPS
will be running under, press the 'Cancel' button, login under the
appropriate account, and rerun the setup program.  If you do not have a
suitable login account, have your network administrator create one for you.
Remember, the account must have Admin privileges.

Note: The password you supply will be encrypted and stored by the operating
system in a secure area.

2. When setup completes, you may start the LPS or LNA by entering the
Service Control Manager from the Control Panel, navigate to the line that
says "Loftware Print Server", and press the 'Start' button.  Notice that
the startup mode is set to Manual.  Set the mode to Automatic if you want
the service to start at bootup.
```

***Note**: If you do not have a User's Guide, there are .PDF files of the Loftware User's Guides on the CD and on the website, as well as an online guide on the Loftware Website. Do not attempt to use the LPS or the LNA until you have read these chapters!*

When you click on the Next button from the LPS initialization dialog, you will then be prompted for your password. Type in the password for the account for which you are logged in. Remember, the account that you have logged in under must be the account under which the LPS and LNA run. After providing the password, setup finalizes the installation and informs you when it is done.

If the reboot dialog is displayed, you must reboot.

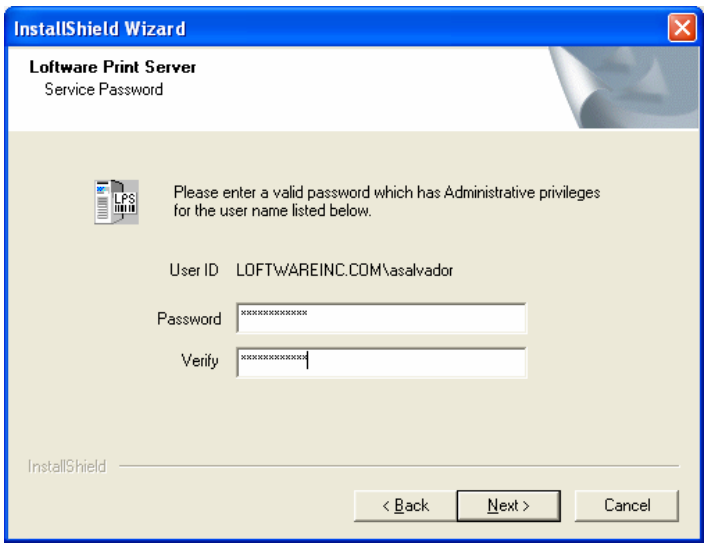

Figure 1- A: Password prompt for LPS and LNA service initialization

Installation Log

Any errors encountered during the install process are logged to 'windows\system32\loftware.log.' Make sure you are ready to fax or email this log to our technical support staff if asked to do so.

Hardware Key

At this point, it is time to put your Hardware License Key back on. If this is the first time you have installed the Key, the following section contains information on installing and troubleshooting this process. Loftware Label Manager automatically detects the key so you are ready to go!

Installing Hardware License Key

Install the Hardware License Key

The hardware license key is always plugged into either the parallel port or the USB port on the PC on which Loftware Label Manager or Loftware Print Server runs. Parallel ports are typically located on the back of the PC and are a female connection (DB25) with two rows of holes totaling 25. USB Ports are small rectangular slots also located on the back of the PC.

The Loftware Print Server Client Programs get their license from the server and therefore do not require a key on the Client PC.

For the USB port:

- You must first complete the setup program. Then, make sure you plug the key into the USB port. Do not plug the key in before running setup.

For the parallel port:

- When using COM/Serial port printers, note that hardware keys **do not** belong in the cabling path to the printer.
- Parallel devices such as LaserJets may be plugged into the other end of the key. The key acts as a 'pass through' device in this scenario.
- If a parallel printer is attached to the key and the key intermittently fails, make sure the power to the printer is on.
- If you already have a Parallel key from another software package, simply 'stack' this one on top of the other.
- If the keys fail when they are stacked, try changing the order in which the keys are stacked.

Figure 1-B: License key installed on Parallel port (left) and USB port (right).

Once setup is successfully completed and the key is correctly attached, check your license string as shown in the 'Checking License Information' section later in this chapter.

Troubleshoot the Hardware Key Driver

If after following the setup instructions above, the license panel displays 'Demo,' you may have a problem in the way that the license key is plugged in.

***Note**: This is for parallel keys only, not USB.*

1. Make sure you have followed the instructions in the previous section on installing the hardware license key.
2. Do you have a Rainbow Super Sentinel or Super Pro Hardware Key? If yes, proceed to Step 3. If not, call Loftware's Technical Support Department.
3. In Explorer, go to the Program Files\Loftware Labeling\Diagnost folder.
4. Run the setup program associated with your operating system which opens the Sentinel Driver Setup Program. This program is called 'setupx86.exe.'

***Important Note**: Make sure that you are currently logged on with administrative privileges before running SETUPX86.*

5. Choose Configure Sentinel Driver from the Functions menu. If an error message occurs stating that the driver is not installed, choose **Functions | Install Sentinel Driver**; then reboot the PC. Run the Loftware Label Manager Design application. Does the lower-right corner of the Status Bar still display "Demo"? If so, exit the Design application and retry this Step.

   The Sentinel Driver parallel/USB ports window opens.
6. Check that there is at least one port listed. If there is none listed, then a hardware conflict must be resolved for that computer. It could be an address conflict, an internal ribbon cable, or a controller card problem.
7. Check the Port Type if there is a port listed. If it says anything but IBM AT, edit it and choose IBM AT from the available drop down list. If you had to edit the Port Type, click **OK**, and then restart the computer. If you are still experiencing problems, call Loftware's Technical Support.

Installing to Windows 2000 Terminal Server

Terminal Services allow you to install a program in one place and make it accessible to multiple users across your LAN/WAN or Internet. This simplifies maintenance and can make programs available to remote users. Starting with version 6.0, the Loftware programs support running under Terminal Services. This includes:

- 2000 Server with Terminal Services
- 2000 Server with Terminal Services and Citrix

The main setup program detects if you are installing to a PC running Terminal Services. It then takes the appropriate steps to make the software operate properly. There are some important things to consider when installing to Terminal Server.

- The setup program must be run from the "Add/Remove" programs Control Panel applet.
- You should run the setup with Administrative privileges at the console. Do not try to install to the Terminal Server from a client station.
- All users of the Loftware programs must have Read/Write Access to the registry.
- The only reason to choose 'Yes' to the "Do you want to initialize the Loftware Print Server (LPS)?" question would be if your intention is to perform remote administration of the LPS or if you want your application and LPS to reside on the same PC. If you are not going to use the LPS, choose 'No'.
- You are given a choice on whether your users will share the same Loftware configurations (including printers) or whether each user will have his/her own configuration. If you choose to initialize the LPS, you are not given a choice; all users share the same configurations.
- On-Demand Print licenses are limited, but Design Licenses are not.
- Loftware allows a number of users up to the number of Terminal Server licenses that you have purchased to concurrently access the software. The default number of licenses is two.
- Printers need to be set up as "TCP/IP" or "Print Manager Spooling." The Device Connections chapter has more information on how to do this.

More Windows 2000 Terminal Server Installation Information

While Loftware cannot include every case scenario in this guide, here are a few points that are important to discuss.

- Only one instance of Preferences (**Options > Preferences** from Design Mode) may be open at a time. If another client attempts to open Preferences, a message is displayed indicating that another client is running this application.
- Permissions are also a factor that administrators must take into consideration when using Loftware 6.0 and above with WTS.
- Set user permissions to "Terminal Server 4.0 Users" to run Loftware under Windows 2000 Terminal Server. Reason: There are differences in the user permissions between NT 4.0 and

WIN2000. In NT 4.0, plain "users" have permissions similar to "Power Users" under WIN2000.

- Microsoft considers applications such as Loftware which were designed for earlier versions of Windows to be "legacy applications." Therefore, correct permissions must be set under WIN2000 Terminal Server.
- In Terminal Services Configuration, under "Server Settings," do the following:

  1. Set Terminal Server Mode to "Application Server."
  2. Set Permission Compatibility to "Terminal Server 4.0 Users."

***Note**: If the Administrator has not performed these steps, and you are a "normal" user running Windows Terminal Server in WIN2000 (as opposed to a "Power" User/Administrator), Loftware will not work. When Design Mode is opened, an error message is received, and no labels/templates can be opened. If Loftware is opened by the Administrator or any "Power Users" in WIN2000, this does not happen.*

License Information and Registration

Checking License Information

1. Open Loftware Label Manager in Design View (Start > Programs > Loftware Labeling>Design 32).
2. Verify that you have your hardware license key plugged in as described earlier.

The Hardware Key information is displayed in the bottom status panel of the window. It can also be found in the Help | About menu.

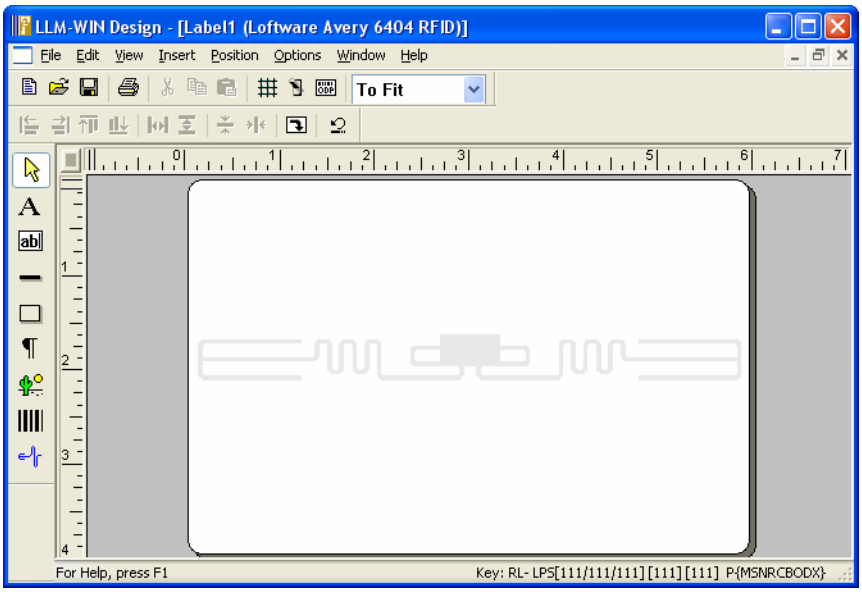

Figure 1-C: Label Design Mode screen displaying License information on the bottom status panel

For LPS Products

If you have purchased any of the Loftware Print Server products, 'LPS' is displayed in the license string, along with the following information. A **'_'** indicates a placeholder for options that are not turned on. The table below explains settings that may be found in a license string.

RL- LPS[20/8/3] [5] [1] P{MSNRCBODX}

RL or **PW**	Rainbow Local – key is local to the machine Password (replaces RL)
LPS	32-bit Loftware Print Server key
20	The first number in the [**20**/8/3] bracket denotes the total number of **device seats**.
8	The second number in the [20/**8**/3] bracket represents the number of **RFID printer seats** – 8 of the total Device Seats can be configured as RFID printers (not in addition to total device seats).
3	The third number in the [20/8/**3**] bracket represents the number of **RFID Reader seats**– 3 of the total Device Seats can be configured as RFID readers (not in addition to total device seats). RFID settings on the license are described below.
5	The number in the second bracket of the example license string [**5**] denotes the number of **Client** connections allowed. (This includes remote status client, ODP client, client integration, Loftware Connector, etc.)
1	The number in the third bracket [**1**] denotes the number of Terminal Server connections allowed.

P	This indicates that the license is a Premier edition. An **S**, rather than a **P**, found in this position indicates that this is a Starter or Standard LPS Edition. The Premier edition requires the following: M, S, N, R, C settings, described next At least 10 total device seats At least 4 client seats The codes in brackets after the 'P' **{MSNRCBODX}** depend on the type of license and explained below.
M	Multithreaded
S	Allows use of the Status Client application
N	Allows use of Notification Agent locally
R	Allows use of Notification Agent remotely
C	Allows use of clustering
B	Marks the 2nd key on the backup node of a cluster*
O	Allows Loftware Connector to log in*
D	RFID functionality is enabled
X	RFID Reader Module is enabled*
*	These features run with, but must be purchased separately from, the Loftware Premier Edition.

RFID License Requirements

In order to use Loftware's RFID capabilities, you must have the appropriate license. You may view your license from the Help | About screen in Label Design Mode. (License string settings are explained in the License Information and Registration topic.)

Settings in the license string that are required to use the Loftware RFID functionality are explained in the Configuring RFID Devices section of Chapter 2. The example **[10/5/2]** shown can be read '10 total device seats, 5 of which can be RFID printers and 2 of which can be RFID readers.'

With this license, when you configure 2 RFID printers and 1 RFID reader, the total number of devices left available to configure would be 7, (up to 3 could be RFID Printers and only 1 more could be an RFID Reader). When you configure all RFID readers you are licensed to use, you cannot use any remaining RFID printer licenses to add another RFID reader.

- You may use an RFID Printer license to drive a non-RFID Printer, but not vice versa.
- You may use an RFID Reader license to drive a non-RFID Printer, but not vice versa.
- You cannot interchange an RFID Printer license with an RFID Reader license.

***Note**: To view the serial number of this license, select Help | About.*

For Loftware Label Manager Products

The Loftware Label Manager products have the serial number of the product displayed in the status panel.

For Demo Mode

If you are evaluating the Loftware Software, 'Demo' is displayed in the license pane. RFID functions, enterprise features, and client modules can be run in demo mode. The limitation of evaluation software is that data characters are changed on the printed label. For example, "Blue Widget" may print as "Slue Figes."

For more information on licensing, refer to the Loftware website, or contact the Loftware Customer Service Department.

Using Help | About to Check Your License

An alternate method of viewing license information is by invoking the 'About' dialog from the 'Help' menu. The following informational dialog box shows the serial number, license, and other information such as whether or not a service pack has been installed, total number of device seats, number of RFID printer seats, number of RFID reader seats, LPS Clients, Terminal Servers, etc.

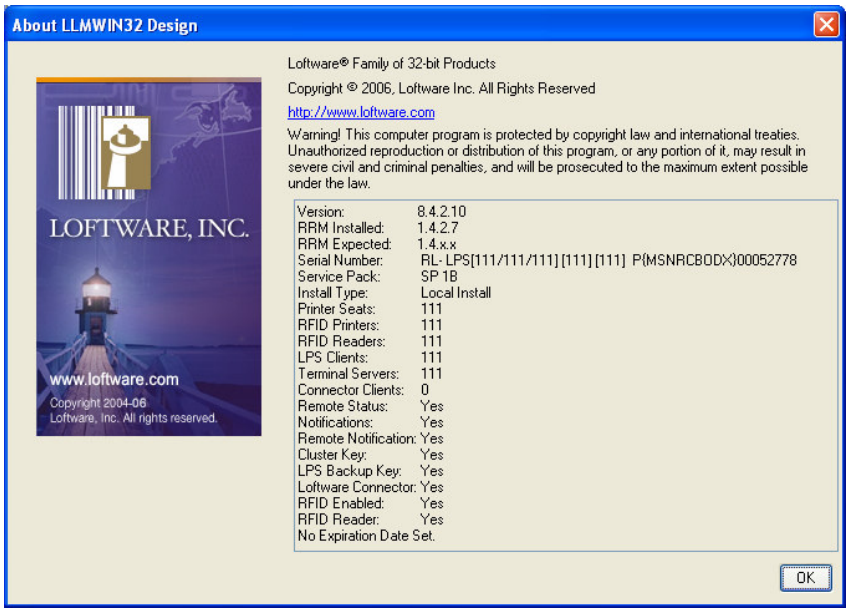

Figure 1-D: Help | About Window displaying license string with serial number and other related information.

Registering Loftware

When you open Loftware in Design Mode, Batch Print, Range Print or On-Demand Print, the Loftware Product Registration dialog reminds you to go to our website to register your Loftware Product. Once you have registered, this dialog will no longer be displayed.

Chapter 2 Device Connections

Device Connection Overview

Topics in this chapter include how to:

√ Define your type of device connection and view device families

√ Configure devices for use with the Loftware Label Manager and Loftware Print Server products

√ Understand Device Status Responses

√ Define the device connection including port selection, communications settings, etc.

√ Set up Device Specific Options. For printers, this usually includes options for stock type, ribbon type, label handling, cutter, etc.

√ Work with multiple printers and printers in a network

√ Configure printers with Windows Terminal Server

Device Connection Types

When choosing device connections for Loftware's native device drivers, you have 4 main options: Port, Windows Sockets (TCP/IP), Print Manager/Spooling, and Web User. Please take the time to read about these connection types in the following sections so that you can make the appropriate choice for your label-printing environment. The sections describe each of these connection types and the benefits and/or drawbacks of using them. Your connection configuration depends on:

- Whether or not you have IP addressable printers
- Whether or not the printers are connected to a network
- How many printers you plan to drive
- Expected Status Response of the printers

Note: *The Loftware Print Server typically uses Connection Type 2 (TCP/IP).*

Connection Type 1 – "Local" Connection: PC to Printer Port

When to use – Use this connection type if the printer is connected directly to the serial, parallel, or USB port of the PC that Loftware Label Manager or on which the Loftware Print Server (LPS) is running (shown in the following figure).

Figure 2-A: Connection Type 1 "Local"– Direct Connection: PC to Printer

This connection is mainly used for "stand-alone" printing with Loftware Label Manager and with On-Demand Print. With this type of connection, the print engine maintains a communication session with the printer via a serial, parallel or USB port. If this is the connection your setup dictates, proceed to the Device Configuration section of this chapter.

Note: *If you want to connect more than 2 printers, use Connection Type 2 or 3.*

Connection Type 2 – TCP/IP (Windows Sockets)

When to use - If your printer is connected to a print server device or has a built-in network connection with a TCP/IP address. (See Figure 2-B.)

TCP/IP is the recommended method for network printing if your printer is "TCP/IP Addressable." It is an extremely fast method for sending a print job directly to a printer via an IP Address/Raw Port Address. Typically, a printer is connected to a print server device that may have one or more serial, parallel, or USB ports. The Print Server has an IP Address assigned to it, and each port on the device has a Raw Port Address. Both addresses are required to configure the printer in Loftware Label Manager. (See the Device Configuration sections.)

Note: *Some printers have built-in Network Interface Cards (NIC) that eliminate the need for print servers. In this case, the TCP/IP address can be specified without a raw port.*

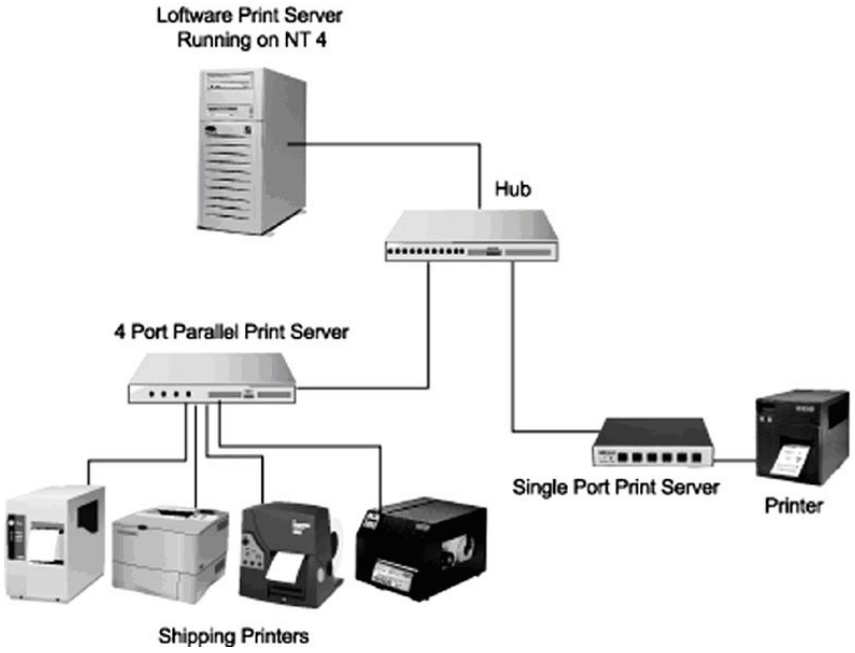

Figure 2-B: Connection Type 2 using TCP/IP

Connection Type 3 – Print Manager/Spooling

When to use – Use this option if the printer is connected directly to the serial, parallel, or USB port of a PC other than the one on which Loftware Label Manager or the Loftware Print Server (LPS) is running. If your printer is IP Addressable, use Connection Type 2. (See previous figure.)

When using this option, Loftware Label Manager queues print jobs to multiple printers via the Windows "Print Manager" instead of sending them directly to the printer. The print engine is only occupied with the job for as long as it takes to pass it to Print Manager, which is substantially faster than sending it to the printer via a serial, parallel, or USB connection. As soon as the job has been passed, the Operating System takes over the task of sending the job to the printer.

The Generic/Text Only printer driver is used as a "pass through" driver, meaning that the native printer language generated by Loftware is sent to the printer without modification. To implement Print Manager Spooling, install the Generic Text only driver, and then, in the LLM Device Configuration dialog box, choose the name of the driver that you installed. The Device Configuration section of this chapter has information on setting up a Print Manager/Spooling connection.

Note: *In certain circumstances, it may be useful to use Print Manager/Spooling if the printer is connected directly to a local port or to a print server device on the network.* ***Example:*** *You are printing through a USB port using the On-Demand Print Application and your label has large or complex graphics. Print Manager/Spooling returns user control to the application much faster than printing directly to the COM/LPT port.* ***Example 2:*** *Another program under Windows "takes control of" the COM Port, preventing Loftware from accessing it directly. Using Print Manager/Spooling with a generic text driver resolves this.*

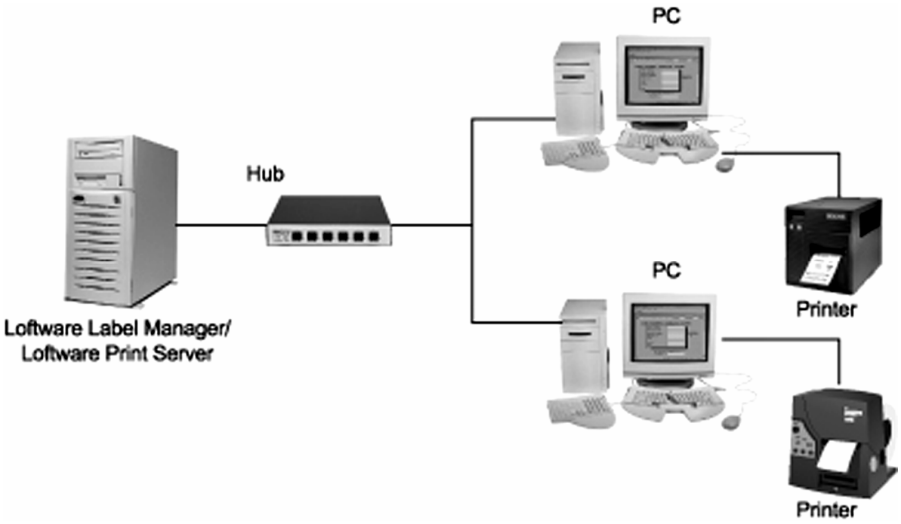

Figure 2-C: Connection Type 3 – Print Manager Spooling

Connection Type 4 – Web User

When to use – Use this option if the printer is connected to a Client PC, either directly to the serial, parallel, or USB port or via a shared network connection.

When this option is used, the printer connected to the client PC receives print jobs from the Loftware Print Server via an Internet Connection using the Web Client, Web Listener, or the ActiveX Internet Application.

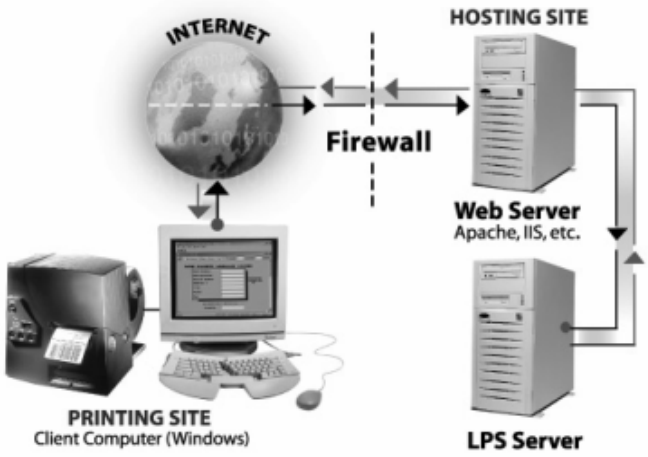

Figure 2-D: Connection Type 4, Web User

Device Connection Summary

Now that you have had an opportunity to see the different options for device connections with Loftware Label Manager and have decided on the type of connection that you want, the next step is to configure your device(s).

Note: *Any printer driver that does not begin with 'Loftware' may be a third party Windows driver. Always use Loftware drivers when available. Only use third party drivers when Loftware does not offer a native driver for that printer. All Windows printers, e.g. LaserJets, use third party drivers.*

Device Configuration

Configuring your device(s) before creating your label allows you to be ready to print to it when you have completed your media setup.

When you design a label or tag, you pick the "target device" for which you want to design the label or tag. Loftware Label Manager uses the selected printer information to make available to you the correct fonts, symbologies, and properties of the printer. You can design a label for any printer, whether you have configured the printer or not. However, before you can print labels, you must configure the printer. The following sections outline several ways to configure printers, starting with the simplest way, to faster and more advanced methods of configuration. You may wish to experiment with several of the methods to see which one suits you.

Note: *The number of printers you can configure depends on the product that you have purchased. The Loftware Label Manager supports up to 4 printer queues; the Loftware Print Server may be upgraded to 499 Device queues.*

Loftware Device Configuration Wizard

In Loftware Design Mode, choose **File | Device Wizard**. The Loftware Device Configuration Wizard is displayed which guides you through the device configuration process.

Step 1 – Choose the Device Number, Family, Model and Alias

1. Choose a **Device #** from the drop-down list. You may choose any device number that is enabled (not grayed out in the Device Configuration grid).

2. Click on the down arrow, and scroll down the list until you find the correct device **Family** for the device you wish to configure.

3. Click on the down arrow, and scroll down the list until you find the correct **Model** for the device. The list displays only the models that are supported by Loftware, or in the case of Windows Printers, only those printers that have been added to the Printers folder in Windows. (More information on Windows Printers is found in a later section in this chapter.)

Note: *See the section below on configuring RFID devices if that is what you have.*

4. Enter an **Alias** for the device, for example, "Shipping Dock #1". Creating an alias is helpful, but not mandatory.

5. The following characters are not allowed when choosing an Alias name.

   , ! * “ “ ; < > A _ (underscore) may be used anywhere but at the start of the name.

***Note**: An alias allows you to give a device a more descriptive name than the default. When you assign an alias:*

- *You may use *DeviceName instead of *DeviceNumber when using the file interface of the Loftware Print Server (LPS).*
- *The LPS Status view uses the alias instead of the default name.*
- *Error messages use the alias.*
- *Notifications from the Notification Agent use the alias.*

---

6. Press the **Options** button to set up label and other options for this device. This is only necessary if you are using a cutter, stock type other than the default, etc.

7. Set the Device options (if necessary), click **OK** and **Next. Step 2** of the Configuration Wizard is displayed.

Step 2 - Select Port Type and Port

1. Choose the **Port Type** from the drop-down list.

   This refers to the Connection Types as described earlier in this chapter. There are 4 choices available when printers are configured: IP, Local, Web User, and Windows Spooler. See the previous section on “Device Connection Types“ for a discussion on the purpose, benefits and drawbacks of each choice.

2. Choose the appropriate **Port** from the drop-down menu. The available ports depend upon the Port Type you have chosen.

Local Port

Port connections that utilize serial (COM), parallel (LPT), or USB (Universal Serial Bus) ports generally involve a communication session between Loftware Label Manager and the printer. The session ends when the entire print job has been sent to the printer. Local connections work well for “stand alone” PCs with the printers connected directly to the PC. They are not appropriate for network printing. If a COM port is chosen, the Configuration Wizard displays Step 3.

Client-Defined (LPS only)

When configuring a printer for use with Loftware’s WebClient or the Internet ActiveX Control (*i*X), choose “CLIENT DEFINED” under the Port drop-down list. This is **not** a printer that has direct access to the LPS or to any of the Loftware Printing Applications such as Batch or Range Print, etc. It is a printer that is only driven by the WebClient. The Client PC utilizes Client-defined printers when connecting to the Server using the Loftware WebClient or the Loftware Internet ActiveX Control.

Be sure to choose the correct options to coordinate with the printer that the Client PC is using. For example, if the Client PC is using Die-Cut label stock one day and Continuous label stock the next day, you *must* configure the same printer twice, once for each stock type. For more information, read the Thin Clients chapter in the LPS User’s Guide.

TCP/IP

Enter an IP address and a Port. This is the preferred method for Loftware Print Server Systems. Your printer must be connected to an IP addressable Print Server or have an internal Network Interface (NIC) card.

Web User

When this Port is chosen, the Manage Users button is shown and an LPS User can be configured or chosen.

Windows Spooler

Choose a defined printer from the drop down list. Any printer that exists in your Printer Control Panel or Printer folder is listed. Any Generic Drivers that have been added are also listed. The Windows Print Manager is utilized for queuing requests.

Step 3 - COM Port Settings (Local Port Type)

This step is only displayed if a serial (COM) port is selected. LPT Ports do not require any of these settings and are therefore easier to set up.

Baud Rate, **Data bits**, **Parity**, **Stop bits** – Select the appropriate values to match your printer settings.

Flow Control - Select one of the following options:

Flow Control Option	Description
Xon/Xoff (default)	This setting is the most common type of software flow control. The printer sends an XOFF character when it cannot receive any more data and an XON character when it is ready for more data. Minimum Null Modem cable required.
Hardware CTS/RTS	Clear to Send / Ready to Send hardware flow control. The printer and PC use special pins in the serial cable to control the flow of data. If you choose CTS/RTS flow control, you must have a Full Null modem cable that supports the necessary pins.
Hardware DSR/DTR	Data Set Ready / Data Terminal Ready hardware flow control. The printer and PC use special pins in the serial cable to control the flow of data. If you choose DSR/DTR flow control, you must have a Full Null modem cable that supports the necessary pins.
None	Loftware Label Manager sends the data out the port and the printer cannot stop the flow of data.
Intermec Protocol	This setting is a proprietary software flow control developed by Intermec Corp. and is only used with Intermec Printer Language (IPL) printers. Using standard protocol provides the most reliable way to drive IPL printers.

Step 4 – Configuration Summary

After specifying a device (step 1), selecting a port (step 2), and defining COM port settings if a serial port is selected (step 3), the Wizard takes you to the last step.

The Configuration Wizard displays the attributes of the configured device:

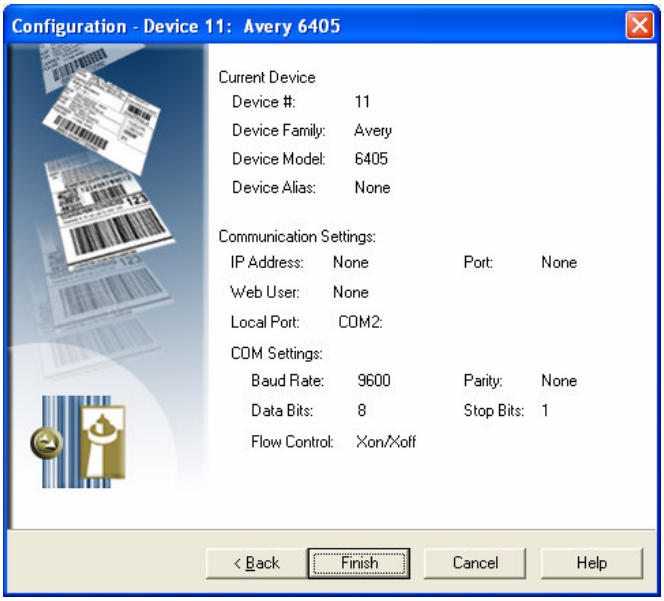

Figure 2-E: Device Configuration Summary.

Press the **Back** button if you wish to make corrections. Press **Cancel** to exit the Wizard without adding the device. Press the **Finish** button if the information is correct and the configuration is complete.

Accessing the Wizard through LLM Device Configuration Grid

You can also access the Loftware Device Configuration Wizard through the **LLM Device Configuration Grid** (described in the following section). Click **File | Devices**, place your cursor in the left column next to the device number you wish to configure, and press **Add**. The **Loftware Device Configuration Wizard** is displayed, and you can configure devices as previously described.

LLM Device Configuration Grid

As described in the previous section, the Wizard takes you through the configuration process step by step. Once you are familiar with device configuration, you may configure new devices directly in the Configuration Grid.

Note: *See the section on configuring RFID devices if this is what you have.*

To access the Device Configuration dialog box:

- Use the **File | Devices** menu command or **F6**. Alternatively, choose the **File | Test Print** from the menu and the **Devices** button from the Test Print dialog box.

The **LLM Device Configuration** dialog box is displayed. If there are no configured devices, the Wizard is displayed automatically. You can use the Wizard, or press Cancel and continue with configuring devices in the grid itself.

Note: *If you have previously configured devices in Loftware, your configured devices are populated in the grid. Otherwise, the grid is blank.*

Sections of the LLM Device Configuration Grid

The column widths of this grid may be resized by placing your cursor to the right of the column header on the vertical line, holding down the left button of your mouse, and dragging the line to the right or the left. This allows you to view lines that are longer than the default grid width. In addition, you may drag columns to change the order of the columns; for example, you may want to place the Alias column before the Model column for easy reference.

Edit Menu

Device Families – Opens View/Hide Device Families dialog to allow filtering of Device Families that are not being used. (See the Device Families section.)

Status – When enabled, this allows statusing of the printer. (See the Device Status section.)

Delete – Deletes the selected device(s). A message is displayed before the device is deleted, making sure that this is the choice you wish to make.

Restore Grid Defaults – This restores the default width and placement of the columns.

Columns in LLM Device Configuration

Family – The name of a Loftware supported device. These are listed by manufacturer, e.g., Sato, Zebra, Imtec, etc.

Note that a "Family" must be chosen before any of the other columns can be defined.

Model – The model number or name, such as "Allegro," "170xiIII," etc.

Port – The Connection Type used by the device, such as an IP address, USB, COM 3, etc.

Alias – An alternative name given the device, such as "Shipping Printer" or "Warehouse 20," etc. This setting is optional.

Attributes – The attributes of the selected device are displayed once the device is configured. The column holds 5 values separated by commas. See the Advanced Settings Section documentation to understand these settings.

8 Timeout in seconds
300 Jobwait in seconds
Y Shared Network Printing (Y=Yes or N=No. See Network Printing section in this chapter.)
N Force Extended Mode (Y=Yes or N=No)
N Disable Status Checking

The attributes can be changed using one of 3 methods:

- Right-click on the row containing the device you wish to change, press **Connection**, or
- Click in the **Port** column, then on the ellipsis button, or
- Click the **Connection** button at the bottom of LLM Device Configuration Grid.

Configuring Devices from the Grid

1. Click in the first column, [**Family**].

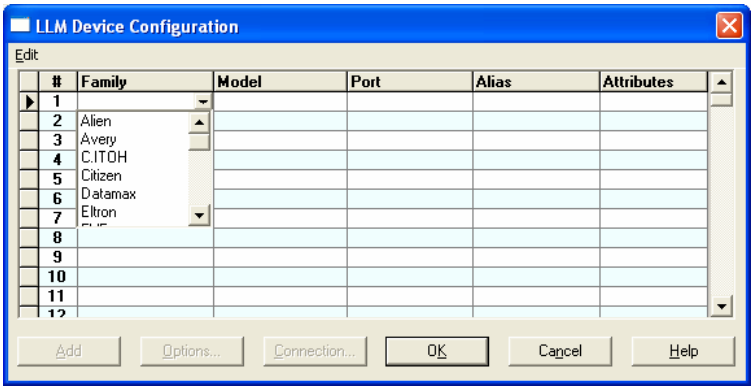

Figure 2-F: LM Device Configuration Grid Device Families.

2. Press on the down arrow to display a drop-down list of Device Families. Choose from the list. (See the Device Families section later in this chapter for information on limiting this list, and see the Windows Printers section for information related to configuring Windows Printers.)

3. Select a device model from the **Model** column.

   At this point, the Options and the Connection buttons become active. If you attempt to choose a Model without first identifying the Family, a message is displayed.

4. Click in the **Port** column, and then press on the ellipsis button. Alternatively, press on the **Connection** button. This displays the configuration dialog for the selected device.

5. Type a device alias in the **Alias** column. This is not mandatory but is suggested.

6. Click **OK** (Hot Key **K**) when you are finished with the four columns or **Cancel** (Hot Key **N**) to cancel adding the device. The Attributes for the device are displayed in the last column of the grid the next time it is opened. (See the following figure.) Add as many device as you are licensed for in this manner, or highlight any one of them and change the device options.

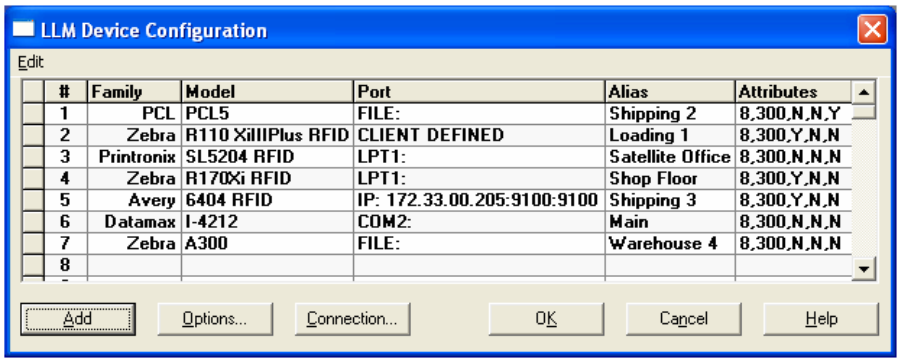

Figure 2-G: Device Configuration Grid displaying attributes

Configuring Device Connection

Print Using Section

- **Port –** [Connection Type 1] – Choose Client Defined, LPT (parallel), COM (serial), or USB (Universal Serial Bus) as described earlier.

***Note**: USB is not displayed as an option in the Port list unless a USB printer is connected to the PC, is powered on, and its USB Drivers are installed. Upon USB Port selection, the selected printer is queried for its device path and the syntax displayed may be something like "USB002: DeviceName/Type," "USB002: Unknown," or "USB002: ??", depending on the printer information the manufacturer included in the device hardware.*

- **Print Manager, Spooling** – [Connection Type 3] - Choose a defined printer from the drop down list. Any printer that exists in your Printer Control Panel or Printer folder is listed. Any Generic Drivers that have been added are in this list as well. The Windows Print Manager is utilized for queuing requests.
- **TCP/IP** – [Connection Type 2] - Enter an IP address and a Port. (Again, this is the preferred method for Loftware Print Server systems.) Your device must be connected to an IP addressable Print Server or have an internal Network Interface (NIC) card.
- **Web User** – [Connection Type 4] - When this Port is chosen, the ellipsis button becomes active, and an LPS User is chosen.

COM Port Settings Section

See **Step 3** of the **LLM Device Configuration Wizard** if you are not familiar with these settings.

Advanced Settings Section

The advanced communications can be used to control timing and statusing. Most users do not need to adjust these settings.

Timeout	This is the amount of time the program waits for a device to respond to input while printing/writing natively. Timeout using a TCP/IP connection defaults to 8 seconds. Larger values give the device more time to "catch up." Larger values also increase the delay before a device error is reported.
Job Wait	This is the amount of time the program waits for a device to respond to input when it is running a batch of labels (in Extended Mode).
Disable Status Checking	Checking this option disables status checking of the device. This checkbox has no effect on devices that do not support status checking.
Force Extended Mode	Checking this option forces the data for each label to be sent to the device individually. This occurs when the device cannot create the data, such as in alphanumeric incrementing, so the data is created and sent by the subsystem (Loftware).
Asynchronous (LPT)	This check box becomes available by selecting LPT as the Port and then pressing F2. When enabled, the print job is immediately cancelled if the printer is in an error state.

Shortcuts with LLM Device Configuration

Double-click – If you double-click on the row for a configured device in the grid, the Device Options dialog for that device is displayed.

The **right-click menu -** Right clicking on any section of a device brings up these options:

Reassign – Allows you to change the device number, by either swapping it with another device number or overwriting an existing device.

Connection – This brings up Device Connections, as described previously.

Options – This brings up **Device Options**. For a printer, label stock, forms control, and advanced options can be set. (See the Device Options section in this chapter.)

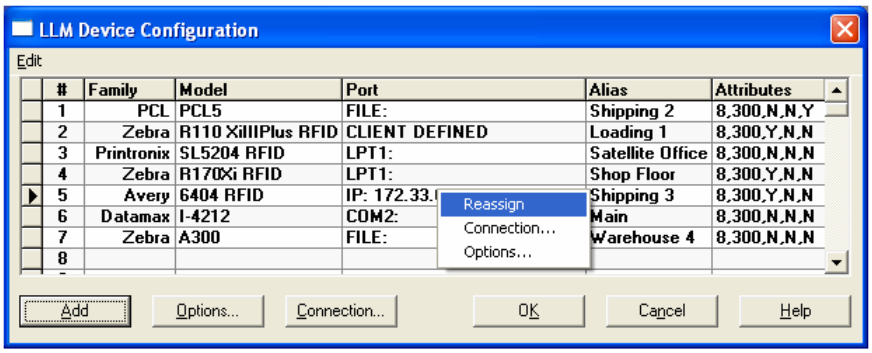

Figure 2-H: Right-click menu options

You may now have devices that are configured but not assigned. "Unassigned" devices are in the Unassigned range that is the grayed section of the grid. Only devices in the Assigned Range are visible in the device drop down lists in Design, On Demand Print, etc. One important note is that Windows printers cannot be configured in or moved to the Unassigned Range.

The "Unassigned" Area – One unique and useful feature of the Loftware Device Configuration Grid is that extra devices may be configured beyond the number of your device seats, up to 499.

If you only have 20 device seats, for example, the grid rows are colored blue and white for the first 20 devices. The rest of the numbered device rows (#'s 21-499) are colored gray. This means that the grayed out rows may be filled with configured devices, but they are considered "unassigned," i.e., they are not available in On-Demand Print, etc. (See the following figure for an example.)

What is the advantage of configuring unassigned devices? – Any time you have a device in which the Device Specific Options change from day to day, it is timesaving to configure this same device again to include all the ways in which it is used. When you want to use the same device but with different options, you can just do a "reassign" to swap the devices from the assigned to the unassigned area for quick printing of labels.

For example, let us say that you have a Fastmark FM403PPLB printer, which is configured as Device #1 (out of 8 printer seats), and it is configured to use Die Cut Stock. However, you often use Continuous Stock in this printer. Configure this same printer as Device #9, and set the Device Option under Stock Type to Continuous. When you need to use the one with the Continuous Stock Type, simply right-click on the row for Device #1, press "Reassign," and swap the Fastmark FM403PPLB with the Die-Cut Stock with the one with the Continuous Stock (swap #1 for #9).

This prevents you from having to reconfigure the device each time you want to use it with other options.

Other times you may consider this unique feature are, for example, when using a cutter with a printer, when you are changing an advanced option such as a different Character Set, or when sending a print job to different Client PCs.

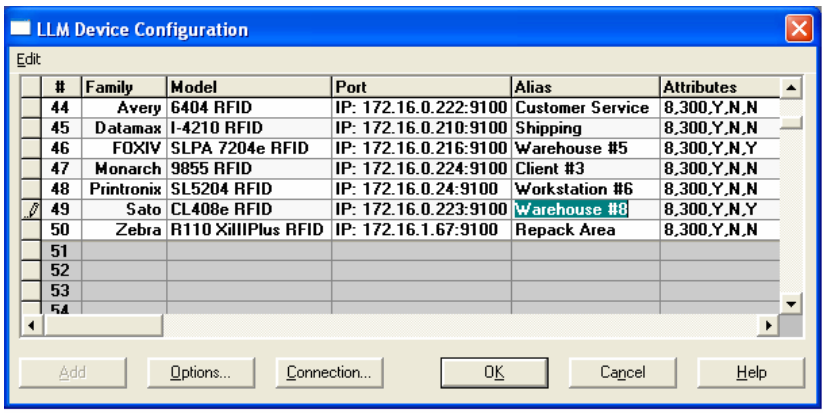

Figure 2-I: Assigned and Unassigned Area of LLM Device Configuration Grid

Configuring RFID Devices

This section assumes that you have configured devices in the Loftware Device Configuration Grid, as previously described and that you are familiar with the "assigned" and "unassigned" areas of the grid.

In order to use an RFID printer, you must have an RFID Printer License. You may view your license from the **Help|About** screen in Label Design Mode. License settings are described in the License Information and Registration section of the Installation chapter. The following list shows the pertinent settings for using the Loftware RFID Solution.

RL- LPS[10/5/2] [2] [1] P{MSNRCBODX}2358847639

Version: 8.4.2.4
RRM Version: 1.4.2.4
Serial Number: RL- LPS[10/5/2] [2] [1] P{MSNRCBODX}2358847639
Printer Seats: **10**
RFID Printers: **5**
RFID Readers: **2**
RFID Enabled: **Yes**
RFID Reader: **Yes**

- LPS Premier Plus RFID is required to to print RFID smart labels. 'RFID Enabled' will indicate 'Yes' if RFID functionality is available.
- In addition, you must have Loftware's new RFID Reader Module (RRM) to write to an RFID tag using a reader. (Reading data from RFID tags is supported programmatically through the Loftware Reader Control API.)

- To print smart labels, there must be at least 1 RFID Printer licensed seat. You may use an RFID Printer license to drive a non-RFID Printer, but not vice versa.
- The **[10/5/2]** portion of the example above shows a license for up to 10 total devices, 5 of which can be Smart Label (RFID) printers and 2 of which can be RFID Readers.

  Example 1: With this license, when you configure one RFID printer, the total number of devices left available to configure would be 9, a maximum 4 could be RFID printers and a maximum 2 can be RFID readers.

  Example 2: With this license, when you configure 2 RFID Printers and 2 RFID Readers, then the total number of devices left available would be 6, a maximum 3 of which could be RFID printers and the remaining 3 seats can only be used for non-RFID printers.
- Please contact Loftware's Customer Service department at (603)-766-3630 to purchase the RFID module or additional RFID device seats.

If you are in Demo Mode
Any number of RFID devices can be configured in the grid up to the number of available device seats (non-gray area in the configuration grid). When these devices are used in demo mode, the EPC / DoD tag data will be 'scrambled' just like any other variable field in demo mode.

If you have a valid license but do not have the RFID module
Any number of RFID devices can be configured up to the number of available device seats (non-gray area in the configuration grid). They will be shown in red instead of black, which indicates that you cannot print/write to these devices. Attempting to print or write to an RFID label or tag in this case will result in an error message. This scenario with LPS will result in the job being routed to 'Critical Failure' which can be viewed from the Status Client. Non-RFID jobs in the LPS will still function normally.

If you have a valid license with the RFID Module
You can configure up to the number of RFID seats of RFID enabled devices. Any RFID printers configured after that will be shown in red and cannot be printed or written to as described above.

***Note**: To use your RFID printer as a normal barcode printer, choose the model that does not have 'RFID' in its name model designation. In this case, the printer will work just like any other printer without the RFID capability.*

Configuration with Windows Printers

***Note:** This section applies to Windows Printers (e.g., LaserJets) only.*

Loftware Label Manager can print to all of your PC printers. This includes standard Windows printers such as LaserJet, dot matrix, bubble jet, etc. It also includes third party Windows drivers purchased for bar code label applications.

Loftware makes no claims as to the performance or reliability of third party drivers.

Configuring a New Printer Connection for Windows or 3rd Party Drivers

1. Add any Windows or 3rd Party printer(s) through Windows:
   Start | Printers and Faxes
2. In LLM, press **F6** or **File | Devices**.

3. Choose Windows in the Device Family drop-down list (in either the Wizard or the LLM Device Configuration grid).

4. Select a printer from the list of configured Windows printers.

   Aliases are not allowed for Windows Printers. See the 'Windows Printers and Aliases' section below for more information.

   Windows printer options (such as paper tray, paper quality) cannot be set from LLM. Printer properties can be accessed from Control Panel | Printers and Faxes.

5. Click **Finish**.

Windows Printer Resolution - When a label is designed for a Windows printer, you can select the printer resolution from a list returned by the printer driver:

1. With the label open in LLM design, select File | Media Setup (or press F5). This displays the Label Setup and Properties dialog.

   Windows printer models listed on this dialog are those configured from Start | Printers and Faxes.

2. On the "Configure Label For" section, select a resolution from the *Resolution* drop-down list. Resolution choices depend on the selected Windows printer model.

Loftware Label Manager will print the label at the resolution specified in LLM. If the target printer is not set for that resolution in Windows, Loftware Label Manager temporarily resets it, prints it, and replaces the original value. If Loftware Label Manager cannot set the Windows printer to the required resolution, an error message is displayed.

Note: *Choose 300 or 600 dpi for LaserJet resolution. Higher values affect download times; lower values adversely affect label quality. Bar codes do not require higher resolution.*

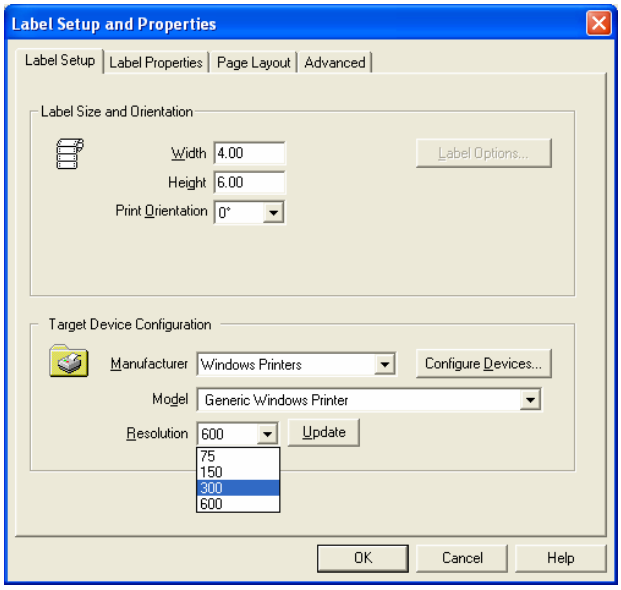

Figure 2-J: Setting the Windows Printer Resolution in Label Setup and Properties

Windows Printer Setup - Follow the previous procedures for configuring your printer from the list of available printers. Use the Windows Control Panel | Printers and Faxes | Properties for configuring printer connection details (baud, port, etc.).

The Loftware Windows Printer - When printing through a Windows Printer Driver, print jobs are routed through the PC's operating system print manager.

Fonts - Some Windows Drivers map TrueType fonts that are sent to them as native printer fonts. If this happens, printing is much faster, but the font style may not exactly match the font displayed in Loftware Label Manager Label Design.

Windows / Spooling Information

It is important that multiple printers in your Printer Control Panel or Printer Folder are not configured to use the same local port!

A scenario in which this causes problems is as follows: If a variety of print jobs are being sent directly to an Intermec printer on LPT 1, the Loftware Label Manager is sending these jobs faster than the printer is able to print, and the printer gets into a "busy" state. If a Windows printer such as a LaserJet is also configured to print to that same LPT port, Windows redirects the jobs to the spooler of the LaserJet printer. This results in lost print jobs, as the printer **never** receives the redirected data.

Windows Printers and Aliases

Note: *At this time, it is not possible to assign an alias to a Windows Printer from LLM.*

Shared network printers cannot be renamed locally. You can, however, add a local printer that points to a shared network printer (Add a Printer from Printers and Faxes) and provide a name for the new printer. This is the name that will appear on the Loftware device configuration grid.

Configuring Devices with the LPS Running

It is now possible to configure printers with the Loftware Print Server running. This allows a company using the LPS on a 24/7 basis the ability to configure printers while continuing the printing of labels. The LPS monitors printer changes, and when a change is detected, the printer list is updated, and notification is sent to the connected On-Demand Print Clients, the Status Clients, and the Notification Agents. There are no messages displayed, but the list of printers is updated "on-the-fly."

Note: *A slight delay of processing may occur during the configuration update process; this is normal as the print engine is updating its settings accordingly.*

Issues with Device Configuration
Be aware that a problem could develop on the client-side if a printer is deleted on the server side. For example, an ODP Client attempting to print to the deleted printer would receive a display that states "No Printer Configured."

Also, when the list of printers is updated because of a configuration change, if more than one printer of the same make and model printer exists, the default is to the first printer in the list that matches the loaded label. For example, say there are Zebra 170XiIII printers configured on Device #'s 1, 5 and 7, the client user is printing to Device 5, and the printer configuration is changed. The default printer then becomes Device 1. This may create a problem for a user who is attempting to print and does not notice that the printer list has changed. The label that was previously printing without any problems is then not able to print. This is another case in point where a Device Alias can be very helpful, as the client user may be more apt to notice a change in the alias of the printer, as opposed to just a number.

Device Options

In addition to device model and connection information, a configured device also contains setup information or "Printer Specific Options" (also called PSOs) and Label Specific Options (or LSOs)). To view and change the setup of the printer, click on any cell in its row, and then press the "Options" button in the LLM Device Configuration dialog box. These settings apply to **all** media printed or written to this configured device.

For Windows Printers or third party printer drivers, refer to the section in this chapter on Windows Printers and Third Party Drivers for an example of Device configuration and setup.

Note: *Keep in mind that the options you see in the dialog box depend on the selected device in the LLM Device Configuration dialog box. See Appendix B for information about options (PSOs, LSOs)* ***specific*** *to your device. For RFID Reader information, refer to the Loftware RFID Reader Solutions User's Guide.*

Sections of Device Options

Note: Remember, this dialog box is different for every Printer Family.

Label Options Section – This is the section where certain label options are chosen, such as Supply Type, Buffer Mode, etc. More information on Media Setup is found in the chapter "Creating a Label" and descriptions of options specific to each Device Family are found in Appendix B.

Forms Control Section – This area instructs the printer how to behave in terms of the stock that is chosen.

Advanced Options Section – This section allows for more customization of the printing process, such as Memory Modules and Symbol Sets. See International Printing chapter for more information on Symbol Sets.

Custom Command Section – Used for a non-typical function. See Appendix B for a description of this option.

Device Options Example: Most printers have 3 Supply Type Options: 1.) Continuous, 2.) Die Cut Labels, and 3.) Mark Stock. If you choose 'Die Cut Labels' and you then add continuous stock to the printer, the printer responds as if it still had the Die Cut stock in it. The supply type must be changed in this case, or configure the same printer in LLM Device Configuration with the new stock.

Shared Network Printing

Whenever you are printing to the same printer from 2 or more installations of Loftware Label Manager, or other applications, the "Shared Network Printing" check box is enabled. If you are using the LPS, this only needs to be done in one place. This ensures that labels being sent from one client do not corrupt other client's data. Formats, images, etc., are downloaded to the printer *each time* a label request is made. Therefore, Shared Network Printing may be considerably slower than other options. More information is available in the Network Printing section of this chapter.

Device Status

This section provides information about how devices respond with status information when the various types of connections are used. Understanding the different types of device status messages under various connection scenarios is the key to being able to print your labels successfully. You are encouraged to read the following information carefully.

Query Status Request

Query requests are only supported on serial (COM) ports. If you are using a serial connection, a query status is very helpful to troubleshoot whether you have the proper cable, baud, parity, stop bits, etc.

Query Status Requests with Serial Printers are a two-way communication query between Loftware Label Manager and any printer that supports statusing. Statusing determines if Loftware Label

Manager is communicating correctly with the printer, whether or not the printer is "on-line" or in an error state, and other hardware information such as firmware version and available memory.

To check device status, use the **File | Device Status** menu command or the F7 shortcut key. A Device Status dialog box is displayed.

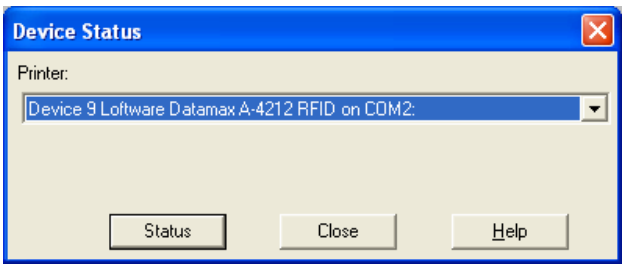

Figure 2-K: Device Status Dialog Box

After clicking the Status box, Loftware Label Manager sends a status request to the device and, if successful, returns a message box.

If the printer is in an error state, an error code is displayed in the message box. Refer to your printer manual for information on error messages.

Understanding Printer Responses

"Printer Responses" is defined as the feedback displayed by an application when making a request to a printer that is in an error state. This is a very complex issue as each printer family may behave slightly differently. The connection to the printer further complicates matters. This section provides information on what can be generally expected as responses back from printers in scenarios involving the different types of applications and printer connections.

If you are driving the printers from your application using the Loftware Print Server, the only way to get positive (or negative) acknowledgement that your print request is successful is to use the TCP/IP interface to the LPS that is described in Chapter 1 of the LPS User's Guide.

***Note**: As you are reading this section, you may need to refer back to the section on printer connections for more information on serial, parallel USB, spooling, and TCP/IP connections.*

Serial

A serial connection is one that has been configured in Loftware Label Manager using a COM Port. This is a two-way communication between the computer and the printer providing more detail than other types of connections. For example, if your printer is out of stock, you may get a specific error message similar to the following:

A "Recoverable Printer Error" means that, when corrected, the print job continues. This is true for USB as well as Parallel printing.

Benefits of "Going Serial"

- More detailed status information
- Cable to printer can be much longer than a parallel cable (up to 50 feet).

Drawbacks

- Requires a specifically "pinned" NULL/MODEM cable
- Requires that printer settings for baud, stop bits, parity, data bits, and flow control match the same settings in the software.
- Slower connection speed than the rest of the connection types.
- The number of serial ports on a PC is limited to 1 or 2.
- Loftware does **not** recommend serial connections when using the Loftware Print Server

Parallel

Stand-alone parallel printing involves a connection from a computers parallel port (LPT) to a Centronix (parallel) port on the printer. Most new printers have a parallel port; many older or less expensive printers may not. If the printer is in an error state, a message is displayed after an attempt to print the label. With this type of connection, it may take from 1 second to 5 minutes to display the message depending on the type of error. When no power is supplied to the printer, the error message is displayed instantaneously.

In other cases, such as the printer being in a "pause" or "stock/ribbon" fault mode, error messages may not be received until the printer's memory buffer is full. The amount of time this takes depends on the size of your label and how many requests that you have made. When the fault condition is corrected, the labels print (as long as the printer has not been shut off).

Benefits of "Going Parallel"

- No communications settings (baud, parity, etc) need to be set. Just plug in the cable and away you go!
- Parallel connections are 3 to 5 times faster than serial connections.
- USB data transfer rate even faster, print quality high as well.

Drawbacks

- Shorter cable lengths (15 feet max)
- Status is not as detailed as a serial connection, but is considered "good enough."
- Computers usually only have one parallel port.

***Note**: Loftware does not recommend using parallel or USB ports with the Loftware Print Server. An exception to this is parallel ports on a print server that is discussed in the Network Printing section of this chapter.*

Spooling

Print Spooling uses the Windows Print Manager to queue requests to the printer. In stand-alone printing to a spooler, if the printer is in an error state, an error message is displayed after an attempt to print the label. When using a Generic Text Driver for example, if an error occurs, Windows displays information about the status of the printer. Many times, if the problem with the printer is corrected and the retry button is pressed, the label prints (assuming there are no further errors).

Benefits of Spooling

- Requests are queued in the Windows Print Manager.
- Printers that are connected to a PC on the network can be shared with other PC's on the network.

- Many printers (hundreds) can be set up on your network and made available for the Loftware Print Server or stand-alone applications.

Drawbacks

- Can be very complicated to set up.
- Increased CPU Utilization

USB

Universal Serial Bus (USB) is a protocol used for connecting computer peripherals to a PC. USB provides an expandable, hot-pluggable Plug and Play serial interface that ensures a standard, low-cost connection for peripheral devices such as keyboards, mice, joysticks, printers, scanners, storage devices, modems, and video conferencing cameras. Migration to USB is recommended for all peripheral devices that use legacy ports such as the PS/2, serial, and parallel ports. Up to 127 USB devices can be connected to one PC. A main feature of the USB standard is that it allows many computer peripherals to be easily swapped for another without having to turn off the computer. However, this is not recommended for configured Windows or Loftware USB printers because the printers are configured for the given Port assignment when the printer is connected to the USB Port. USB 1.1 currently supports a data transfer rate of 12 megabits per second.

This high speed gives USB quite an edge over standard serial and parallel connections. USB 2.0 supports even higher data transfer rates of up to 480 megabits per second for connection to high-performance peripherals.

Benefits of USB

- High Data Transfer Rate
- Longer Cables can be used, up to 30 feet
- Up to 127 Ports may be utilized on one PC
- Generally easier to connect, plug and play, little configuration, if any

Drawbacks of USB

- Troubleshooting may be more difficult; behaviors under error conditions vary a great deal.

The USB 1.1 communication architecture connects a PC to a USB printer via a simple four-wire cable. Many label printers are now available with USB port capability, and Loftware Applications now have the ability to print to these printers through their USB port.

TCP/IP

An IP connection involves configuring the LPS to print directly to the IP address of the device. When an IP address in Stand-Alone Printing is used, error messages are displayed after an unsuccessful attempt to print the label.

For example, if Loftware is connecting to a device that has an IP address but the device is not powered on, the connection fails and an error message is displayed. In this scenario, when the device is powered back up, the label does not print; it has to be resent to the device, and is then printed. (The Loftware Print Server recovers and prints the label in this case.) In another scenario where the printer is powered up but is in “pause” (stock/ribbon fault) mode, an error message is not created until the printer’s memory is full, and then the error message is displayed. When the fault condition is corrected, the labels that are in the printer’s memory are printed, as long as the printer was not shut off.

***Note**: TCP/IP is the preferred connection for the Loftware Print Server.*

Benefits of using TCP/IP connections

- Device can be anywhere LAN/WAN/Internet, etc.
- Connection is fast and reliable.
- Very easy to set up, as long as appropriate network hardware is in place.
- Many devices (hundreds) can be set up on your network and made available for the Loftware Print Server or stand-alone applications.

Drawback

- Device requires a network TCP/IP address that involves extra setup. See your network administrator for more information on this.

Device Families

What is a Device Family?

A Device Family is a manufactured line of printers or readers. Loftware currently supports a number Device Families, including Avery, C.Itoh, Citizen, Datamax, Eltron, Fastmark, IBM, Imtec, Intermec, Novexx, Paxar/Monarch, PCL5, Pressiza, Printronix, Quick Label, Sato, TEC, UBI, Windows and Zebra.

Loftware is continually adding support for new devices (and device families). Changes in the device list are automatically reflected anytime you install a new Loftware Label Manager release or update on your PC. Appendix B contains more information on Loftware's supported devices. A current list of supported printers may also be found on Loftware's Website, http://www.loftware.com/, under Support / Technical Support.

For convenience, you may want to display only certain device families and "hide" others. Maintaining a shorter list of available devices in this manner simplifies procedures for:

- Adding new devices
- Reconfiguring your devices
- Assigning a "target" device for your label format

Use the **Options | Device Families** from Loftware Design Mode menu or in LLM Device Configuration, and choose **Edit | Filter** to show or hide the displayed list of Device Families.

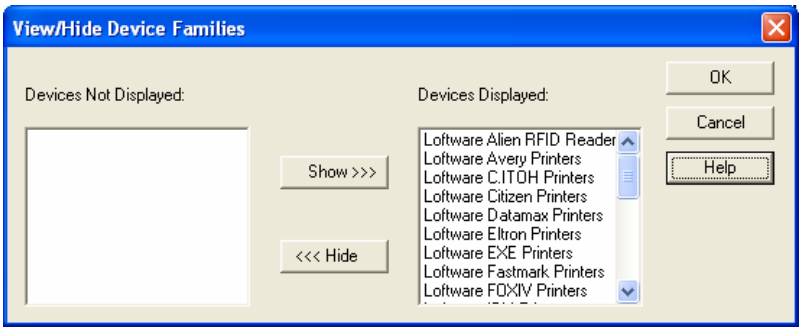

Figure 2-L: Setting Device Family options

Note: *All device families begin with 'Loftware' so as not to be confused with third party drivers of the same name.*

Test Printing

In label design mode, use the **File | Test Print** menu command, Function key (**F9)** or click on the Test Print icon in the standard toolbar. Choose which of the assigned printers you want to print from in the Test Print dialog box.

Errors and Warnings when Printing

If an error occurs when you try to print the label, read the following to discover the problem. Often, if you check to see that the Printer is turned on, that the Print Head is down, and if you check your label design for errors, you may have a quick solution. If a warning message is displayed, you may not have to change the label design to print, but be aware that the label may not print correctly. More information on error and warning messages is found in the Test Printing Labels section (Chapter 3), as well as printer-specific Error Messages in Appendix B.

Note: *Pressing the "Label Options..." button invokes the label specific options dialog box for this label. Pressing the "Configure Devices" button invokes the LLM Device Configuration dialog box that lets you configure devices and set up device specific options.*

Merging Label Formats from One Printer to Another

You may want to alter a label format to fit a different printer for a variety of reasons. The label may have been designed for one printer, but now must be printed to a different printer, or the label may need to be printed to a variety of printers in different locations. Design it **once**, and merge the format to fit different printers easily using Loftware Label Manager!

To merge the Label Format:

1. Enter Loftware Label Manager Design Mode and open your label format.
2. Configure the new printer with Loftware Label Manager as described previously.
3. Under the **File | Media Setup** menu (or F5), change target printer manufacturer name and model to the new printer and click **OK**.

Fields on your label are “merged” to the new printer type. Fonts and bar codes convert to the nearest field correlation on the new printer type. If the two printers are very dissimilar, or if the printer resolutions are different, you have to make some minor adjustments to the label format.

Note: *A warning message is displayed alerting the user to changes and possible conflicts. More information on Error and Warning Messages is found in Chapter 3.*

Network Printing

It used to be that our customers connected their thermal transfer bar code printers directly to their PCs through a serial, parallel or USB port. Today, connecting the printers directly to the network is more the norm. There are several benefits to connecting the printers directly to the network:

- Devices can be shared by more than one application.
- Devices can be assigned TCP/IP addresses.
- Devices do not rely on PCs and are therefore more likely to be “on-line”.

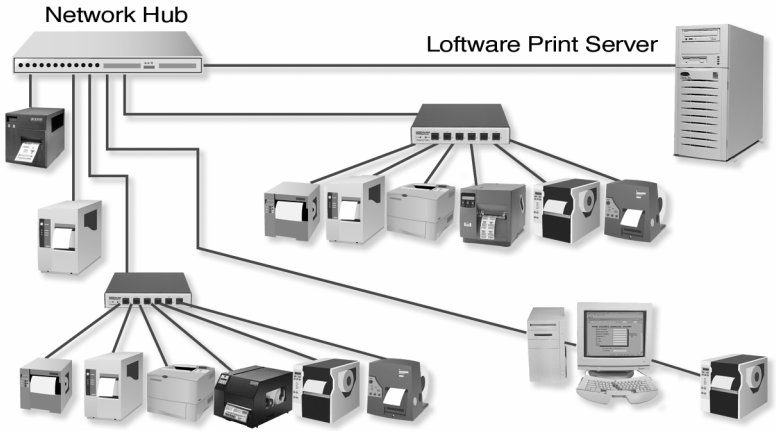

Figure 2-M: Thermal Transfer printers networked together

The figure above shows a typical printer network setup with printers connected to the network backbone using print servers. Print Servers typically resolve network data directed to a particular IP address into Serial, Parallel or USB output. Printers can also be connected as “shared” devices by attaching them to PCs on the network. One problem with this technique is that the PC must be turned on in order to access the printer.

The discussions below describe how you can configure Loftware to drive printers that are attached to your network in various ways. The preferred method is dependent upon whether you are running the Loftware Print Server or the Loftware Print Server Premier Edition.

Loftware Label Manager - Use the Direct Connection (Port) [Connection Type 1] or “Print Manager/Spooling“ option; [Connection Type 3] and choose a “Generic Driver” that has been configured to point to a particular IP address. Do not set the IP address directly via the socket prompt as a printer failure causes the system to go into a five-minute ‘timeout’ state.

Loftware Print Server and Loftware Print Server Premier Edition - Use the "Windows Sockets (WOSA)" option; supply the IP address AND raw port address.

Shared Printers vs. Print Servers

A **shared printer** is usually connected to a PC's parallel, serial or USB port and then made available to other PCs on the network. (See Sharing a Local Printer.) The PC could either be dedicated to servicing print requests to the shared printer, or it could also be used for any other tasks that may be required (Client Workstation, File Server, etc.). Keep in mind that any other tasks occurring on the PC impact the resources available for printing, and vice versa. Shared printers can be accessed by Loftware Label Manager via Print Manager/Spooling.

Note: *The printer is only available as long as the PC it is connected to is turned on and connected to the network.*

A **print server** is a device that is connected as a node on the network and has one or more serial, USB and/or parallel ports. Some print servers also have buffer memory, which allows them to queue print data if it is being received faster than the printer is able to handle. Using a print server allows the setup of numerous network printers that are not dependent upon any PC's resources. Print servers essentially give the printer an IP address that can be accessed by Loftware Label Manager via Print Manager/Spooling or Windows Sockets.

Setting up Print Server Devices

Print servers usually come with their own setup program that allows you to install the device on your system. The setup section is a general explanation of the necessary steps to install a print server; consult the documentation for your print server for specific instructions. Print servers are available from Extended Systems, Intel, HP, and many others. You may have used them in the past to connect Laser printers to your network.

Note: *Consult your Network Administrator before adding or removing any device on your Network.*

- The setup program installs the appropriate drivers onto your PC.
- A configuration utility allows you to search your network for print servers, and assign each of them a unique IP Address and Name as well as other various settings.
- If you are going to use the Print Server with Print Manager/Spooling, when adding your Generic Text printer, choose either Local Printer or My Computer. (See Adding a Local Generic/Text Printer Driver.) When you are prompted to choose a port, you should see a choice that corresponds to the Print Server driver that you previously installed.
- If you are going to use the Print Server with Windows Sockets (WOSA), Loftware Label Manager requires two pieces of information: the IP Address and the Raw Port Address. In the Device Connection dialog box, type in the IP Address of your print server, and the Raw Port address of the actual port on the print server where the printer is connected. The table below illustrates two examples of Raw Port Addresses for two different manufacturers' network print servers:

Extended Systems ExtendedNet T1000	Raw Port Address
Port 1	9100
Port 2	9101
Port 3	9102
Port 4	9103
Intel (3 port)	
Port 1	3101
Port 2	3102
Port 3	2501

Note: *The Raw Port address can be obtained from your Print Server documentation or manufacturer.*

Enabling Shared Network Printing

Whenever you are printing to the same printer from 2 or more installations of Loftware Label Manager, or other applications, you must enable "Shared Network Printing" in the LLM Device Configuration dialog box at each of the Loftware Label Manager Design Mode installations. If you select **TCP/IP** or **Web User** in LLM Device Configuration, "Shared Network Printing" is automatically enabled. (See figure below.) This ensures that labels being sent from one client do not corrupt other client's data. Formats, images, etc., are downloaded to the printer *each time* a label request is made, therefore, *Shared Network Printing* may be considerably slower than other options.

Warning! *Each Loftware Label Manager installation on the network that is going to be connected to a shared printer must enable the Shared Network Printing option. If not enabled, unpredictable results and possible loss of label formats and images may occur.*

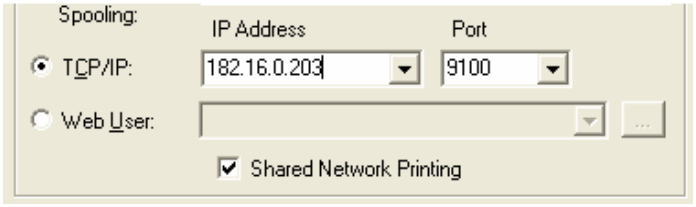

Figure 2-N: Shared Network Printing Enabled

Setting up Network Printer Drivers

Adding a Local Generic/Text Printer Driver is only necessary if you want to connect your printer to your PC, and then either print to it using Print/Manager Spooling, or share it so that others on the network can print to it. If you want to print to a printer that is installed elsewhere on the network, go to "Network Printing" in this chapter.

Adding a Local Generic/Text Printer Driver

In Windows 2000/ Windows XP

1. **2000:** Click Start > Settings > Printers.
   XP: Start > Printers and Faxes

2. **2000: >** Add a Printer
   XP: Click Add a Printer under Printer Tasks. The Add Printer Wizard dialog box opens.

3. Click **Next**; select the **Local Printer** option, and then click **Next** and select the port where the printer is connected.

4. Scroll down in the **Manufacturers** column and select **Generic**; in the **Printers** column; select **Generic/Text Only;** click **Next**.

Note: *If a dialog box appears explaining that a driver is already installed for this printer, choose the* ***Keep existing driver*** *option; click* ***Next****.*

---

5. Name the printer something besides **Generic/Text;** click **Next**.

   For example, rename it using the Device Manufacturer and Model Number. Do not use LPT1, COM1, or USB as your name. If you wish to change the **Device Name**, insert the text tool icon into the field and replace "Generic/Text Only" with the desired name. Choose **No** when asked to use this printer as the default printer.

6. If you would like to share the printer, select the **Shared As** option and change the **Share Name** if desired, click **Next**.

7. Choose **No** when asked to print a test page, click **Finish.**

   At this point, you may be required to insert the floppy disk or CD-ROM with the appropriate driver(s) on it or point to the drive or directory where the driver(s) is located.

8. Complete the instructions in the dialog boxes; the printer is added successfully.

   If you chose a **COM** port, you should also complete the next steps, as you may need to configure the communication settings for the port.

9. In the **Printers** folder, select the printer that you have just added and choose **Properties** from the File menu, verify that the correct port is selected, click on the **Ports** tab; click on the **Configure Port** button.

10. Verify that the settings for baud rate, parity, stop bits, and flow control match the printer's settings. After making any necessary changes, click **OK**; click **Close.**

Note: *Always use Xon / Xoff flow control.*

The printer is now added and configured successfully.

Sharing a Local Printer

Sharing a printer is when rights or permissions are given to users to print across a Local Area Network (LAN), a Wide Area Network (WAN), the Internet or an Intranet to the printer which is

local to the workstation or Network computer. If you are not sure you have rights to share a printer on your workstation, contact an Information Systems (IS) representative.

Note: *The printer is actually shared by the operating system, not Loftware Label Manager.*

Some of the benefits of sharing a printer are:

- Each printer may be set for a specific label type (dimension, specialty stock, etc.) and allow multiple personnel to print a range of print jobs without the need to change the media (label stock) or ribbon.
- Eliminate specialty equipment: Communication boards (multi-port parallel, USB and serial), print servers, connectivity modules, etc. by connecting the printers locally to workstations then sharing them.
- Fewer printers: Multiple personnel can print to the same printer by spooling jobs to a shared printer.

Note: *Printer sharing is available only to printers that are added locally.*

Sharing a Local Generic/Text Printer Driver

1. Add a **Local Generic/Text Printer Driver** as described in the previous section if you have not already done so.
2. Double-click the **My Computer** icon on the desktop; double-click on the **Printers** directory icon; double-click on the icon of the printer to be shared.
3. Select the **Properties...** command from the **Printer** menu.
4. Select the **Sharing** tab; choose the **Shared As:** option. If desired, the **Share** name may be changed.
5. Click **OK** when finished

The printer is now successfully shared. If desired, leave the **Printer** dialog box up to monitor files as they are spooled to the printer.

Sharing a Network Printer

A Shared Network Printer is a printer that resides on a Local Area Network (LAN), a Wide Area Network (WAN), the Internet or an Intranet, and has been made available for users on the network to print to. (See “Sharing a Local Printer.”) If you are not sure if you have rights to Shared Network Printers, contact an Information Systems (IS) representative.

The benefits of connecting to a network/shared printer are the combination of Spooling and Sharing.

Note: *Printer sharing is available only to printers that are added locally.*

Connecting to a Shared Network Printer

To connect to a shared network printer:

1. Double-click the **My Computer** icon on the desktop.
2. Double-click on the Printers directory icon; double-click on the **Add Printer** icon or from the Windows Explorer select the **Printers** directory.
3. Double-click on the **Add Printer** icon.

   The **Add Printer Wizard** dialog box is displayed:
4. Select the **Network** printer server option; click **Next.**
5. In the **Share Printers** column, select the network printer; click **Next**; *** Finish**.

***Note:** A Network Printer is a printer that is either connected to a server, to a workstation, to a network as a node, or to a print server.*

---

6. Choose **No** when asked to print a test page; click **Finish**.

   At this point, you may be required to insert the floppy disk with the appropriate driver(s) on it or point to the drive or directory where the driver(s) is located.
7. Complete instructions in the dialog boxes; the printer is successfully added.

Configuration with Windows Terminal Server

Shared vs. Not Shared

When you installed Loftware to your Terminal Server, if you chose to initialize the Loftware Print Server, then all your printers are shared. This means that when printers are configured and assigned in Loftware, they are displayed in every connected client's printer lists, as well as on the console. If you did not initialize the LPS, you were given the option of sharing or not sharing the client printers. The following points help you to understand the impact of the choice you made at that time.

If you chose Shared:

- Remember that with WTS (Windows Terminal Server), working in a client terminal server session is the same as if you were working on the console and vice versa. When you configure and assign a printer, either on the console or on one of the clients, the printer is displayed on everyone's printer list.
- Only one instance of Device Configuration (F6) may be open at any one time.

If you chose Not Shared:

- Any Windows Printers configured on the console are displayed in each of the connected client's configured device (Windows 2000 only).

Printer on Local Port of Client

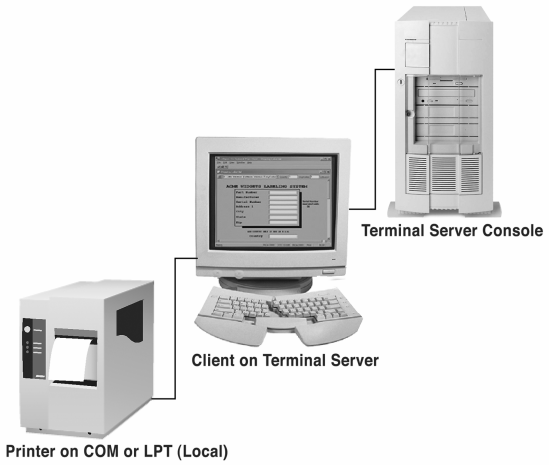

Figure 2-O: Terminal Server Client with Local Port attached

Step 1 – Connect the printer to serial, USB, or parallel port on the client.

Step 2 – Create a Generic Text Driver on the client PC as described in a previous section.

Step 3 – Create a Generic Text Driver on the Terminal Server and connect it to the shared client driver as described in the previous section.

Printer with an IP Address

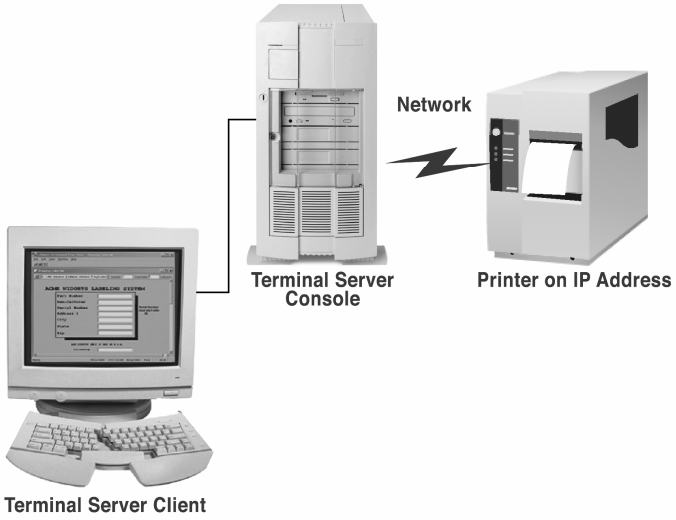

Figure 2-P: Terminal Server Client using a printer on an IP Address

Step 1 – Set up the printer with an IP address on your Network

Step 2 - Configure the printer on the Terminal Server client or the console with an IP Address as documented in the previous section on TCP/IP Configuration.

Special Considerations with Windows Terminal Server 2000

If you configure a Windows printer in Loftware on the Windows Terminal Server console, it is displayed with Printer number and Port or IP Address, etc. If a Windows printer is configured by a logged in client, then the printer is displayed with the client computer name and session number, as shown in the following figure:

Shared Printers Example 1 - If a Windows Terminal Server 2000 client configures a Windows Printer on their local PC (not in a Terminal Session), and then logs in and assigns the printer in a session, it is displayed on all other clients' and the console's printer lists (with the client computer name and session number added to the Printer name). If that client session then shuts down, the printer still shows as available on all the other clients' and the console's assigned printer lists. If a client or the console attempts to print to this printer, a "session unavailable" message is displayed.

This printer cannot be removed because it is no longer displayed in the configured device list of the other clients or the console.

- To change the assigned printer, "re-assign" it with a client or console printer that is currently connected, or configure a printer and assign it to the same Printer Number as the unavailable printer.
- If the client that configured the printer logs back in, the printer becomes available on the configured device list for all, and it can be removed at that time. In addition, any print jobs pending are printed at that time.

Shared Printers Example 2 - Consider the following scenario if all printers are being shared, but not all users have access or permissions to the same printers:

- User "A" running on Windows Terminal Server adds a Windows printer to the Assigned Printers list in the Loftware "LLM Device Configuration" (F6) dialog box and closes the dialog box.
- User B subsequently opens Device Configuration, but has not defined / configured this Windows printer. User A's Configured Windows Printer is erased because the Loftware Program cannot "see" that printer.
- If User A re-opens Configuration, however, it is still visible in the configured device list, as it still exists on that user's system.

Solution: Windows Printers that are defined for one client user should be defined for all users if shared permissions are set.

Chapter 3 Creating a Label

Overview of Creating a Label

This chapter introduces Loftware Label Manager and takes you through the steps of label design. This chapter presents several easy to follow tutorials which cover:

- Design Mode: the menu bar and toolbars
- Using the Label Wizard in design view and changing the label options
- Creating a new label and understanding the field properties box
- Label presentation and orientation
- Saving the newly created label to a label file
- Test printing the newly created label
- Viewing the On-Demand Print Form that corresponds to the label
- Complete a simple On-Demand print job for the new label

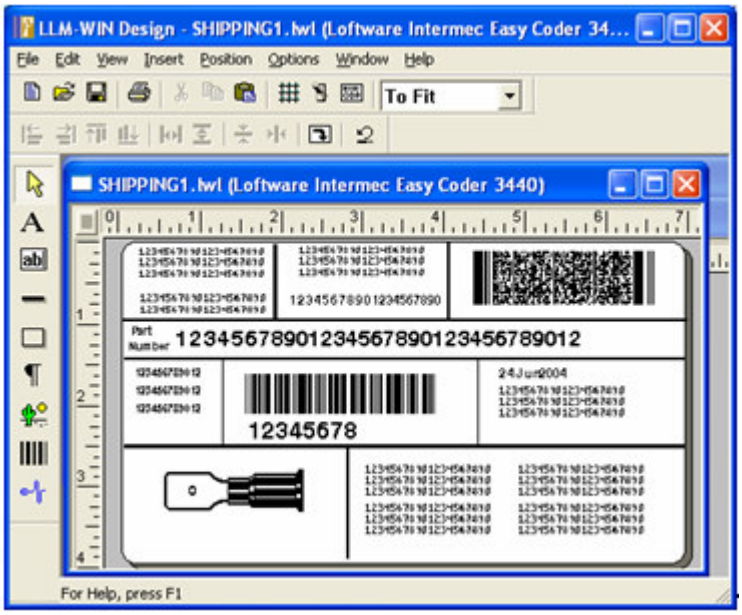

Figure 3-A: Freely mix Text, Bar codes, Boxes, Lines, Paragraphs, and Image fields on the label

Design Mode - Menu Bar, Toolbars, and the Toolbox

The Loftware design workspace provides several options and tools that facilitate the creation of labels. These include the menu bar, toolbar buttons for the most commonly-used operations, a toolbox icons for fields that may be added to the label, rulers, a screen odometer and a resize indicator.

The Menu Bar

The menu bar, located at the top of the Loftware Label Manager main window, is similar to those found in other Windows applications. Aside from the normal point-click-select method, you can access a menu from the keyboard by pressing ALT plus the underlined letter of the menu. For example, to access the File menu, press ALT+F.

Note: *Since all Loftware Label Manager toolbars are "dockable," their positions are given as the default relative position when you start the program.*

The main menu includes the following:

File From this menu, you can access options for creating, opening, closing, and saving label files, smart labels, RFID tags; or compliance templates. It includes options for test-printing labels; importing labels designed with LLM-DOS, importing hardware data streams (Intermec IPL, Monarch MPCL II and Zebra ZPL), accessing the Device Wizard, obtaining device status, managing LPS users, setting default properties for fields that will be added to the current label (Device Tool Defaults).

Edit From this menu, options are included that allow you to undo an operation cut, copy, paste or delete fields; edit field attributes or field data sources; rotate fields or rotate the entire label.

View From this menu, options are included that allow you to display or "hide" Loftware Label Manager on-screen components (e.g., the Field Properties box, the Toolbar or the Toolbox); to switch views between Label Design and the On-Demand Print Form to activate the grid display; to change zoom levels.

Insert From this menu, options are included for adding fixed text and variable label fields, bar code, images and graphic elements (e.g., lines, boxes and borders), and when enabled, an RFID field.

Position This menu provides options for aligning or evenly spacing two or more selected fields.

Options From this menu, you can access an option to enable a change in the application language (see next section), Audit reporting. You can select File Locations, Layouts, Device Families and Preferences. The Preferences Option allows you to change default configurations within the Loftware Label Manager system. The Options menu is also used to select screen displays (such as Lock Tool, align to grid or grid settings), units of measurement and to set the Toolbox position. The Options menu also allows you to launch programs from other certified Loftware integration partners.

Window With the Windows options, you can arrange window displays when working on two or more label files at the same time.

Help The Help menu provides information regarding Loftware Label Manager operations, specific help on a topic, and the help index. The LLM version, serial number, license type and service pack number are found under the Help menu (About Loftware Label Manager).

The Loftware Label Manager Toolbar

The Loftware Label Manager Toolbar, located just below the menu bar, provides quick access to frequently used menu commands as well as a number of information windows.

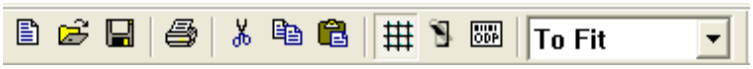

Figure 3-B: Label Designer Dockable Toolbar

The toolbar buttons and controls described from left to right are:

New	Opens a new blank label file.
Open	Opens an existing label file. Highlight a filename to display a thumbnail graphic of the label.
Save	Saves the active label in your system's memory to a disk or hard drive.
Print	Test prints a sample of the active label.
Cut	Cuts or deletes the selected field or fields from the label.
Copy	Copies the selected field(s) to the clipboard.
Paste	Pastes copied field(s) from the clipboard onto a label.
Grid	Displays / hides the grid format.
Switch Views	Switches views between the Label design screen and the On-Demand Print Form.
On-Demand Print	Opens the On-Demand Print Application.
Zoom Level	Choose from one of the preset zoom levels. Custom zoom levels are added by using the **View | Zoom** menu command.

To identify a toolbar icon, position the mouse arrow on the icon without clicking and hold it for approximately one second. A "Tool identifier" is displayed. The toolbar display can be toggled on or off with the **View | Toolbar** menu command.

Rulers - Fine-tune label formats quickly with Loftware Label Manager's horizontal and vertical rulers, which graphically display field movement and placement with complete accuracy. Click with the mouse on the ruler intersection (Label) icon to display the Label Setup dialog box. See the "Label Setup and Properties" section for more information on Label Setup.

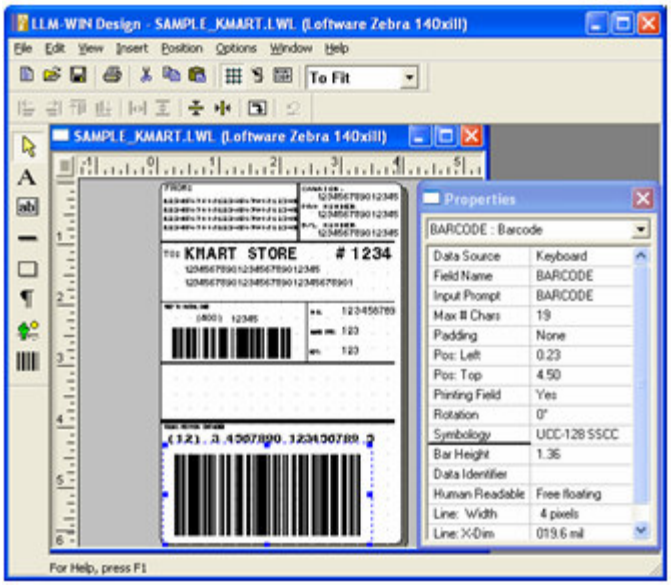

Figure 3-C: Rulers graphically display field movement and placement

The Screen Odometer - The Screen Odometer is located at the bottom of the design screen to the right of the license key information. The odometer pinpoints the precise location of the mouse pointer whenever you are designing or editing a label. When the mouse is moved, the reading on the odometer changes. When a field is moved by dragging it with the mouse, the odometer displays the position of the upper left corner of the field. The first number indicates the mouse's pointer position on the label's horizontal axis (reading from the left); the second number reveals the arrow position on the vertical axis (reading from the top).

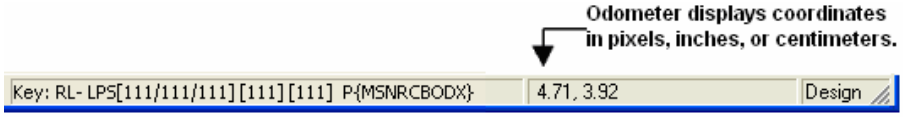

Figure 3-D: Status display showing Screen Odometer and License.

The Odometer, displayed in the lower right corner of the design screen, helps to place fields in precise locations on the label, an important consideration if compliance labels are being produced. (The Loftware Label Manager Grid function can also help align label elements for compliance labeling.)

The default reading for the Screen Odometer is in inches. The default may be changed to centimeters, millimeters or screen pixels by using the **Options | Units** menu command.

The Resize Indicator - The Resize Indicator box is displayed on the status bar. Whenever you resize a field (e.g., a text or bar code field), the box identifies the resizing parameters (usually height and width), as well as the current measurements of the field.

As with the Screen Odometer, the default reading is in inches, but you are able to change to centimeters, millimeters or screen pixels by clicking on the **Options** menu.

Figure 3-E: Status Bar showing Resize Indicator and License

Note: *See Chapter 1 for information on the license string shown above.*

The Positioning Toolbar

The positioning toolbar is located just belowthe standard toolbar and features icons that help to align or position multiple fields simultaneously. This capability allows you to create columns, rows, and evenly spaced fields quickly. These tools are only available when two or more fields are selected.

Figure 3-F: Label Designer Position and Editing Toolbar

From left to right, they are:

Align Left Aligns 2 or more selected fields with the field that is farthest to the left on the label.

Align Right Aligns 2 or more selected fields with the selected field that is farthest to the right on the label.

Align Top Aligns 2 or more selected fields with the selected field that is nearest to the top of the label.

Align Bottom Aligns 2 or more selected fields with the selected field that is nearest to the bottom of the label.

Center Horiz Centers one or more selected fields horizontally on the label.

Center Vert Centers one or more selected fields vertically on the label.

Space Across Spaces evenly 3 or more selected fields horizontally (across) a label.

Space Down Spaces evenly 3 or more selected fields vertically (from top to bottom) on a label.

Rotate Label Rotates the entire view of the label 90 degrees clockwise. (Note: This does not affect the printed label orientation.)

Undo The Undo icon cancels the last action performed, if the file has not been saved. The design application supports multiple levels of Undo.

A positioning toolbar icon may be identified by placing the mouse arrow on the icon, (without clicking on the icon) and holding it for about one second. A “tool tip” is displayed. Information about the icon is displayed in the Status Bar on the lower left side as well.

The position toolbar display can be toggled on or off with the **View | Position Bar** menu command.

The Loftware Label Manager Toolbox

The Loftware Label Manager Toolbox may be used to create fields on the label quickly. Using the **Options | Toolbox** menu command, the Toolbox may be placed on the left edge of the screen, the right edge of the screen, or the Toolbox may "float."

The icons in the Loftware Label Manager Toolbox are:

 ***Select***	Select a field or a group of fields for editing.
 ***Label***	(**Fixed Text**) Add a text field that remains unchanged for all labels in a given print run (e.g., a return address label). Text fields for RFID tags are only available in non-printing mode.
 ***Text***	(**Variable**) Add a text field in which the text changes from label to label during the print run (e.g. "Customer Name" field for an address label). Text fields for RFID tags are only available in non-printing mode.
 ***Line***	Add horizontal or vertical lines to a label.
 ***Box***	Add a box to a label.
 ***Paragraph***	Add variable text fields that are automatically split and justified at appropriate word breaks.
 ***Image***	Add a graphic image (e.g., logo) to a label. (Available only if your printer supports graphics)
 ***Bar Code***	Add a bar code field to a label.
 ***RFID Field***	Add an RFID chip and antenna to the label. This tool is only available when the target device for the label or tag is a Loftware-supported RFID device.

Note: *To identify a Loftware Label Manager Toolbox icon, place the mouse arrow (without clicking on the icon) and hold it for about one second. A Tool identifier is displayed in the status bar at the lower left side of the window.*

Language Options

Selection of the default language for Loftware applications (Design, On-Demand, Range, Batch, etc.) is made during the original installation. However, there may be cases where the default language of Loftware applications needs to change with different users.

Example: The application language is set to "English" during the install. This has worked well for the person doing the installation, "User A", the next logged in user, "User B", and the third logged in user, "User C." However, Users "D", "E" and "F" would like the language of the Loftware applications to be displayed in their native language, French. To change this setting for "User D" and the subsequent users, "E" and "F" in this case, perform the following steps:

1. Open a Loftware Application such as Design Mode:

   Start > Programs > Loftware Labeling > Design 32

2. Select **Language** from the Options menu.

3. Select Français (French) from the drop-down list.

4. Press and hold **Ctrl, Shift and L** simultaneously on the keyboard to display on the dialog an added option to set the selected language as the default language for new users.

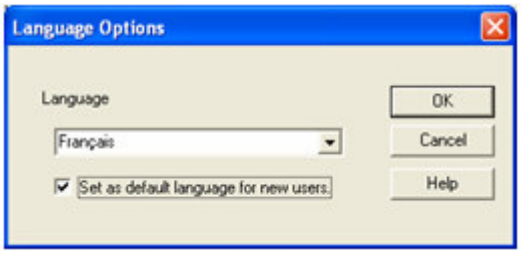

Figure 3-G: Language Options

5. Check the "Set as Default Language for New Users" box.

This changes the default application language for Users D, E, and F to French, but it does not affect Users A, B, and C, whose application language remains English. This setting may be changed as often as needed, but each previous logged in user's settings are retained unless subsequently changed in the **Options > Language** menu.

The New Media Wizard

The New Media Wizard guides you through the process of creating a label, an RFID Smart Label, or an RFID Tag. It provides the option of starting with a blank label or selecting from a list of compliance templates.

1. Open Loftware in Design Mode by selecting Programs > Loftware Labeling > Design32 from the Start menu.

Note: *If this is the first time you are opening Loftware after a new install, the New Media Wizard is displayed automatically. If you have created a label or tag previously in Design, the last label or tag that was edited or designed is displayed, unless this setting has been turned off in* ***Options > Preferences****.*

---

2. Select **File | New** to access the **New Media Wizard**. From the Welcome screen, click on Next. This brings up the **Media Type Selection** dialog.

3. Choose the media type you want to create in the **Select Media** section of the dialog.

   - **New Label** – Allows you to create a blank label ready for design. This is described in the "Creating a New Label" section.
   - **New RFID Label** – Allows you to create an RFID Smart Label ready for design. (This option is documented in the RFID chapter.)

- **New RFID Tag** – Allows you to create an RFID tag ready for design. (This option is documented in the RFID chapter. While RFID Tags and RFID Readers can be configured in LLM design mode, to write encoded data to a configured RFID Tag, you will need the Loftware Reader Module with Loftware Premier Plus RFID. You will also need a Loftware RFID Reader to write data to the tag. The Loftware Reader Module is documented in a separate Loftware RFID Reader Solutions User's Guide.)

4. Click **Next**.

The next dialogs that are displayed depend on the type of media you had selected to create.

Creating a New Label

What is a label?
A label is a design area on the computer screen where a label format is created or edited.

Loftware Label Manager may be customized to create virtually any size label you wish. A label contains one or more fields. A field is a specific object within a label selected for editing. For example, you can select and edit a bar code field, a text field, a graphics field, a line field, a box field, or a paragraph field.

√ Creating RFID Smart Labels is described in the RFID chapter.

√ Creating RFID Tags is described in the RFID chapter. (While RFID Tags and RFID Readers can be configured in LLM design mode, to write encoded data to a configured RFID Tag, you will need the Loftware Reader Module with Loftware Premier Plus RFID. You will also need a Loftware RFID Reader to write data to the tag. The Loftware Reader Module is documented in a separate Loftware RFID Reader Solutions User's Guide.)

√ Using a Compliance Label Template is described in the next section.

In Loftware Label Manager, you can add new fields to a label by using the Toolbox or **Insert** on the menu bar. To change a field's properties (the appearance of a field) you must first select it by clicking on it. When a field is selected, selection handles are displayed around the field and its properties/attributes are displayed in the Properties Box, as long as the Properties Box is visible. More information on the Properties Box is found in a following section.

To create a label:

1. Continuing from the "Select Media" section of the New Media Wizard, select **New Label**. Click **Next**.

New Label Setup - Select a Template Type

2. To create a label from scratch, select **Blank Label**.

   To pattern your new label after an existing compliance template, select **Compliance Template Label**. (Using a Compliance Template Label is described in the next section.)

3. Click on **Next**. You are next prompted to select the target printer for the new label.

New Label Setup - Select a Target Device

4. The Device Selection dialog prompts you to select the target device for the new label. Select the printer Manufacturer and Model from the drop-down lists, and then click on **Next**. (Target device selection for RFID smart labels is described in the Creating RFID Smart Labels section of the RFID chapter. Target device selection for RFID tags is described in the Creating RFID Tags section of the RFID chapter.)

   Note that if you select a printer that has not been configured, you will be reminded later when you select label options from **File | Media Setup**.

New Label Setup - Set Field List and Media Dimensions

Next, the Field and Media Selection dialog prompts you to select a field list and the media dimensions. (Field and media selection for RFID smart labels is described in the Creating RFID Smart Labels section of the RFID chapter. Field and media selection for RFID tags is described in the Creating RFID Tags section of the RFID chapter.)

5. In the **Field List Selection** section, the default "None" is the only selection unless there are any LLMFIELD [.lst] files in the main Loftware folder. LST files provide a means of constraining the field names on a label to a pre-defined list. If .lst files are available, these are listed in the drop-down list. (See the "Advanced Techniques" chapter for information on .lst files.)
6. Enter the height and width of the label stock in the target printer. Note that as you change the dimensions of the label, they are reflected in the **Preview** Section.
7. Set the orientation for this label. The default is 0º. Information on print orientation is found in the "On-Screen Label Presentation" section in this chapter.
8. Click on **Next**.

View New Media Wizard Summary

9. A summary of your selections is displayed. If satisfied with your settings, click on **Finish**. If you need to make changes, press **Back**.

Using a Compliance Label Template

Compliance label templates provide a quick starting point for designing a label.

To design a label based on a compliance label template:

1. Continuing from the "Select Media" section of the New Media Wizard, select **New Label**. Click **Next**.

Select a Template Type

2. From the Template Type Selection dialog, select **Compliance Template Label**. Click **Next**.

Select a Target Device

3. The Device Selection dialog prompts you to select the target device for the new label. Select the printer Manufacturer and Model from the drop-down lists, and then click on **Next**.

   Note that if you select a printer that has not been configured, you will be reminded later when you select label options from **File | Media Setup**.

Select a Label Template

4. In the **Select Template** section, select the compliance template you want to use from the list. When a selection is made, a preview and a description of the template are displayed. Press **Next**.

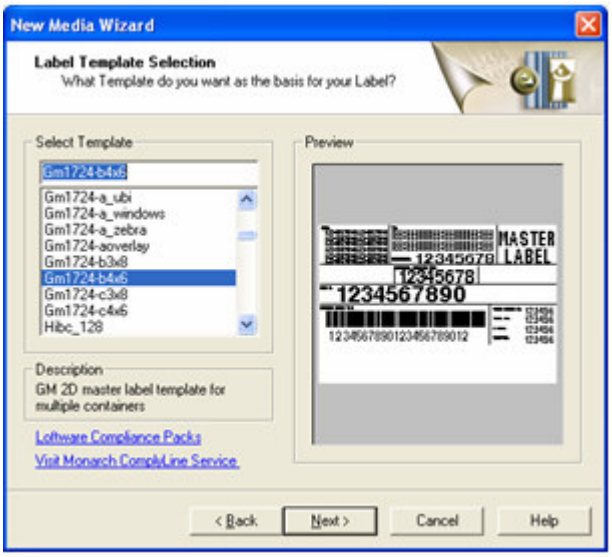

Figure 3-H: New Media Wizard dialog box with General Motors compliance label preview.

6. A summary of your selections is displayed. If satisfied with your settings, click on **Finish**. If you need to make changes, press **Back**.

Note: *If you have not configured the target printer for this label, when you access Media Setup (F5), a reminder is displayed.*

Creating a New Label Using the Toolbar Icon

When in Design mode, clicking the "New" icon on the Loftware Label Manager toolbar opens a blank label (4" x 6" default) or tag. If you have previously created a label or tag, the new label or tag is automatically attached to the last device for which you designed a label or tag. The next section describes how to set up the label, view label properties, or make changes to the label setup.

Creating an RFID Smart Label

Refer to the "Creating RFID Smart Labels" section of the RFID Chapter.

Creating an RFID Tag

Refer to the "Creating RFID Tags" section of the RFID Chapter. Tag reading/writing functionality requires Loftware's new Reader Control. This is described in a separate Loftware RFID Reader Solutions User's Guide.

***Note**: While RFID Tags and RFID Readers can be configured in LLM design mode using LLM's New Media Wizard, Block Configuration, and Device Configuration, it is important to note the following:*

1. *To write encoded data to a configured RFID Tag, you will need the Loftware Reader Module with Loftware Premier Plus RFID.*
2. *You will need a Loftware RFID Reader to write data to the tag.*
3. *You can only perform tag writing with the Loftware Reader Module. Tag reading is only supported programatically through the Loftware Reader Control. The Loftware Reader Control is an extension of the Loftware .NET Control that allows developers to implement tag reading and writing via the Reader Control API.*
4. *Creating RFID Tags is described in the RFID chapter. RFID Readers and DSO settings, the Loftware Reader Control – methods, properties, and sample applications – are discussed in a separate document, "Loftware RFID Reader Solutions User's Guide."*

Label Setup and Properties

With the exception of the Target Device Configuration section and the Media Properties tab, most of the settings in this tabbed dialog are not relevant to RFID tags. For RFID tags, the top section of the dialog (Media Setup) allows you to set a design mode field constraint on the tag by selecting a .LST file, if one is available. (Design mode constraint for labels can be set from the Advanced tab.)

To change the general design of your label:

With the label open in Loftware Design Mode, press F5. Alternatively, choose File | Media Setup from the menu bar, or click on the label icon located at the intersection of the horizontal and vertical rulers.

The **Label Setup and Properties** dialog box is displayed:

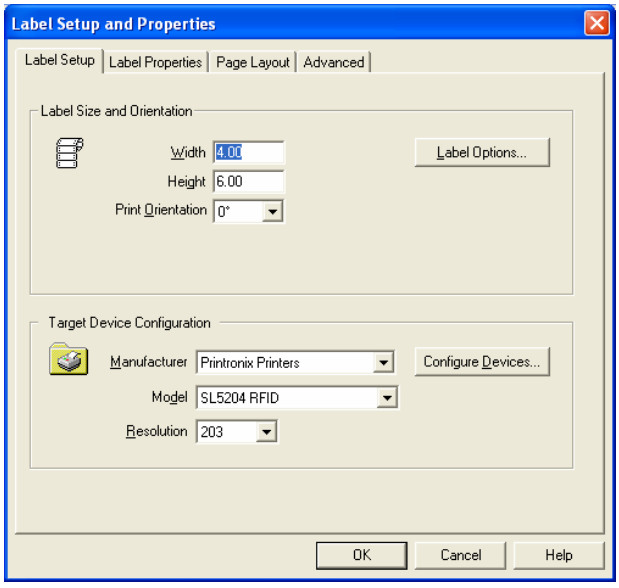

Figure 3-I: Label Setup and Properties dialog box

Label Setup Tab

In the Label Setup tab, the Label Size and Orientation and Target Device Configuration sections present several options:

Label Size and Orientation Section

Width – The width of the label stock for this label.

Height – The height of the label stock for this label.

Print Orientation – At 0°, the label prints the same orientation shown on your PC screen. Setting Print Orientation at 90° rotates the label clockwise 90°. Other Print Orientation options are 180° and 270°. (More information on orientation is found in the following section.)

Label Options – When the *Label Options* button is pressed, a dialog box specific to the selected printer is displayed. Make changes to these options as needed, and then press **OK**. For more information on label options specific to Loftware supported printers, see Appendix B of this User's Guide.

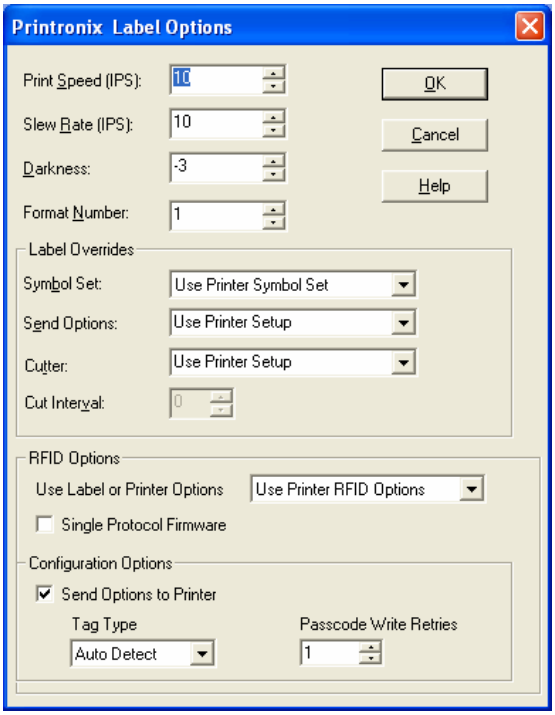

Figure 3-J: Label Options

Target Device Configuration Section

Manufacturer – Choose a device from the drop-down list to print this label. Information on device connections and configuration can be found in Chapter 2, and information on Loftware's specific Device Families can be found in Appendix B.

Model – Choose from the models displayed in the drop-down list.

Resolution – The resolution at which the label prints. The available resolutions depend on the printer model chosen above.

Click *OK* when you have finished with this tab.

If you click *OK* and the chosen device has not been configured for the label or tag, a warning message gives you th option of configuring the device now. If you choose not to configure the device at this time, the Label Setup and Properties dialog box closes. If you choose to configure the devide now, the LLM Device Configuration dialog box is immediately displayed. Refer to Chapter 2 for information on configuring devices in LLM.

Label Properties Tab

Click on the Label Properties tab to display label information.

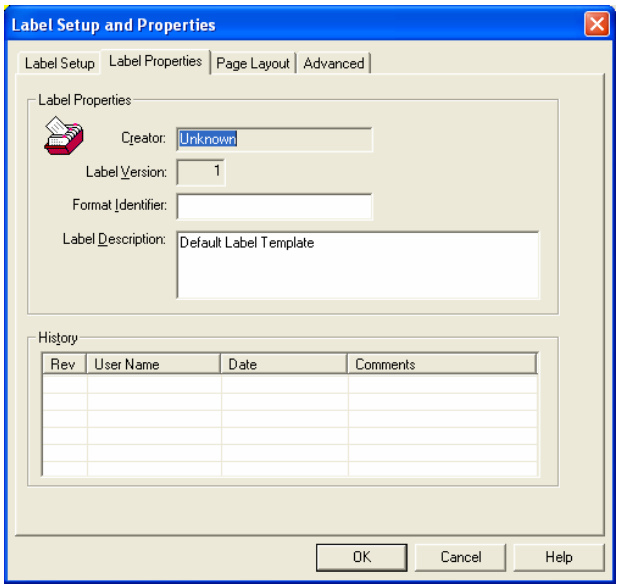

Figure 3-K: Label Properties Tab

Label Properties Section

This section shows the following information:

Creator – This is the logged on user who created the label that is currently active. This is listed as "unknown" if this is a label carried over from a previous version of Loftware (prior to 6.1).

Label Version – The figure above displays the current label version, which is 1. Each time this label is saved then re-opened in Loftware Design Mode, the version number is incremented by 1.

Format Identifier – This section is used to identify the group or type of format that the particular label represents.

Label Description – The label description gives you information about the type of label. If this is a blank label you chose in Step 1 of the Wizard, it is called a Default Label Template. If you chose to create a Compliance Template, such as a GM or UPS Template, the name, type, size and any other information associated with that label template is displayed.

History Section

The History grid is not user modifiable. It is simply there to provide a general log of who changed the label and when. A list of what was changed is not available.

Rev – This column displays the label revisions by number.

User Name – This column displays the name of the logged in user who created the label version.

Date – This column displays the date and time that the label version was created.

Comments – This column displays any system comments.

Note: *Label Names are always saved with the created label. If you select* ***File | Save As*** *and change the name of the label, the history information of this label is removed and a message stating "New label created from old" is added in the Comments line.*

Click *OK* when you are finished with this tab.

Page Layout Tab

Click on the Page Layout tab to define 'multi-up' page layouts and associating those layouts with your label. If you are printing only one label per page, then this section does not have to be configured.

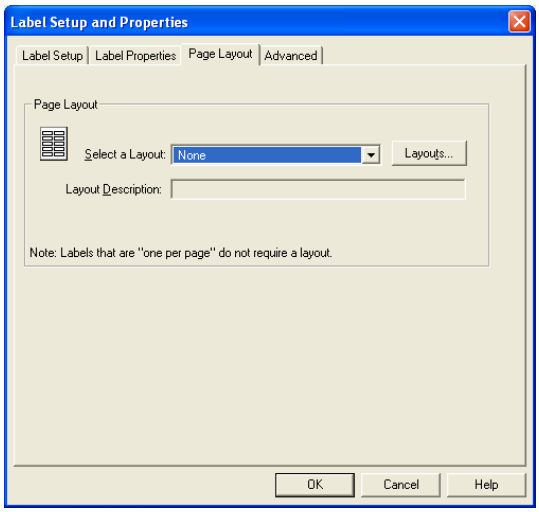

Figure 3-L: Page Layout Tab

Select a Layout – Allows you to select a Page Layout from a drop-down list.

Layouts – Accesses the Manage Layouts dialog box, where a page layout may be added, edited, or deleted. See the chapter on Page Layouts for complete information on adding or customizing page layouts.

Layout Description – Displays a description of the layout chosen in Select a *Layout*. *Example:* Selecting **4Up** displays "Print 4 Labels a Page" in the dialog box.

Advanced Tab

Click on the Advanced tab to select a field list, if you have created any .lst files, and change Legacy Settings for Installed Fonts, Memory, and X and Y coordinates.

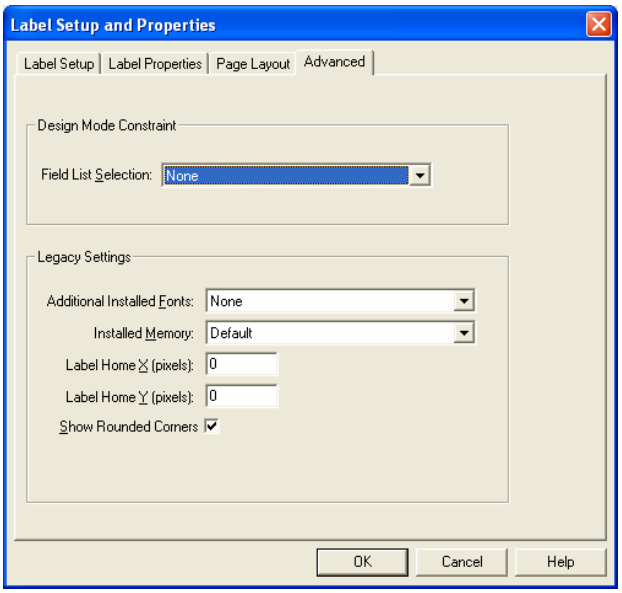

Figure 3-M: Advanced Tab in Label Setup and Properties

Design Mode Constraint Section

Field List Selection – If you have created any .lst files, they are listed in the drop-down menu and may be selected. Selecting a .lst file constrains the field names available to the designer to those mentioned in the list. More information on creating .lst files and constraining Label Design Mode is found in the Advanced Techniques chapter.

Legacy Settings Section

Additional Installed Fonts – This drop down box reflects any additional fonts that have been installed. The available fonts depend on the printer selected above. The default is None.

Installed Memory – This drop-down box reflects any additional memory that has been installed. The default is named "Default", and the choices available depend on the printer selected above.

Label Home X (pixels) – Adjusts the horizontal printed position of the label fields in pixels (Example: If the web of your label stock is wider than the label, then you may want to adjust this setting so that the label is printed entirely on the label, and not on the web.)

Label Home Y (pixels) – Adjusts the vertical printed position of the label in pixels. (Read previous example)

Show Rounded Corners – When checked, this option displays the label stock with rounded corners in Design Mode.

***Note**: The label fields do not change in design view, only in the printing of the label.*

On-Screen Label Presentation

Loftware Label Manager features complete ease of use in all aspects of label design, including the ability to design labels in one orientation and print them in another. For example, this methodology allows you to conveniently:

1. Design a 4" x 6" label with the 6-inch dimension displayed horizontally on the screen.
2. Print the same label on a 4" printer rotated so the 6" dimension is vertical.
3. Set the Print Orientation in the **Media Setup Wizard** or **File | Media Setup** (**F5**).

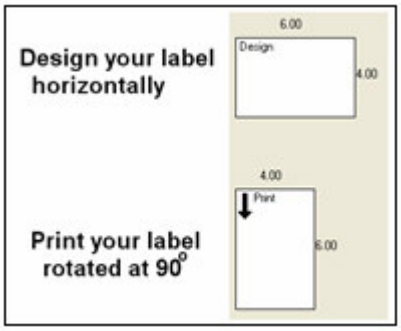

Figure 3-N: Label Orientation

Orientation Options – In the previous example, the label is designed "right side up," but printed clockwise at 90°. When would you use this option? *Example:* If you are using a label with a color bar on one side of your label or a pre-printed label with a return address or logo, you may want to utilize the print orientation option in order to make designing the label easier, while printing it the way your stock dictates. Loftware Label Manager allows you to view the label with the fields such as text in a normal, "readable" position as you design, and print the label in a variety of orientations.

***Note:** At 0°, the label prints the same orientation as shown on your PC screen. Setting Print Orientation to 90º rotates the label clockwise 90º for printing.*

***Note:** Clicking on the Rotate View icon does NOT change label print orientation; it only changes the label view, aiding in designing a label right side up. See example below.*

Orientation Example – As described above, a pre-printed label is more easily designed "right-side up" and then printed rotated at 90° using the Print Orientation option. See following figure:

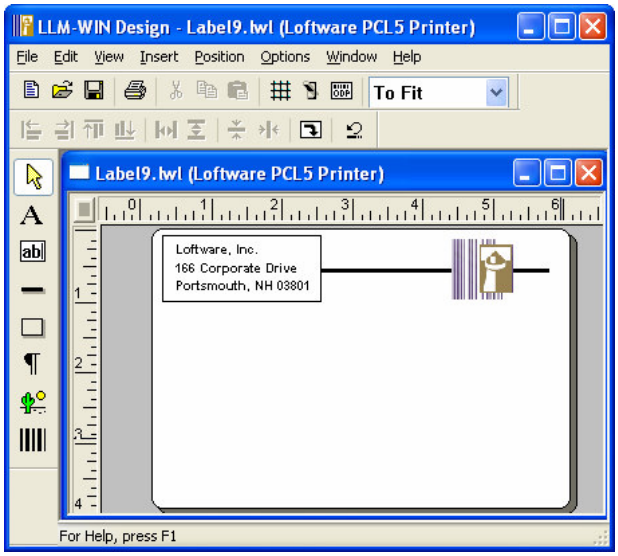

Figure 3-O: Pre-printed label ready to be designed "right-side up."

When the label is presented, it is displayed vertically:

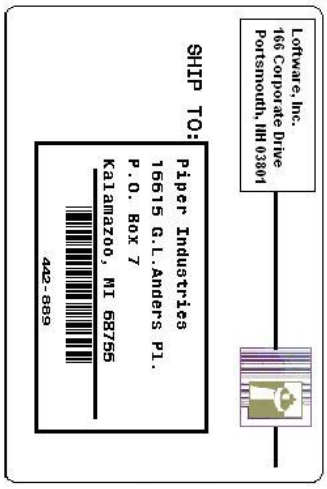

Figure 3-P: Previous Label as it is displayed when printed

Designing the New Label

This section walks you through designing the label you just created. The tutorial explains how to create a basic shipping label, including a shipping address, a return address and a part number encoded in a bar code. The finished sample label looks like the following:

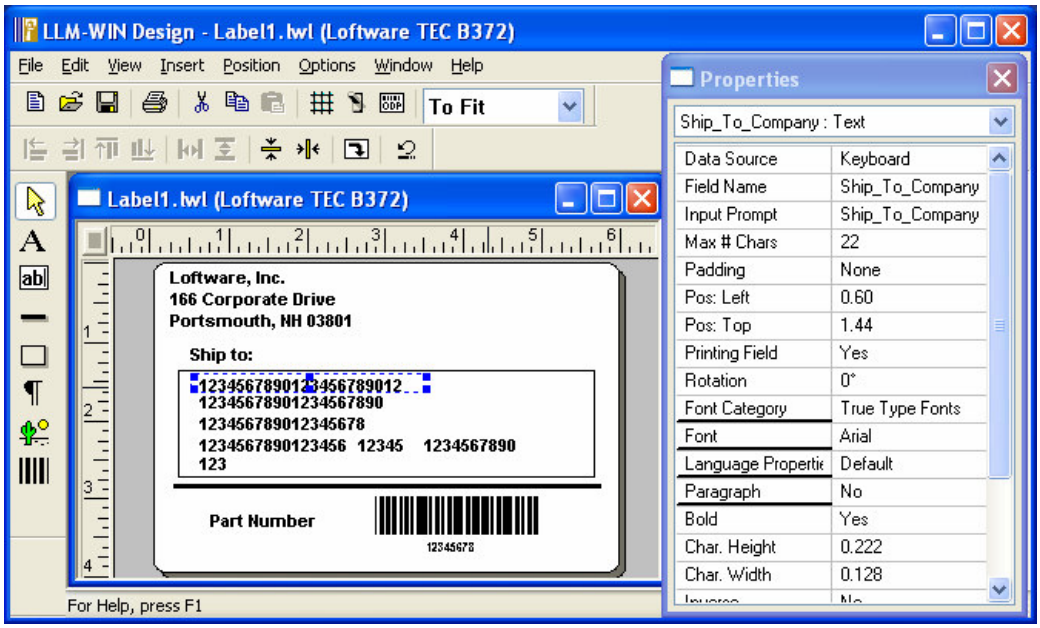

Figure 3-Q: Finished Label

Text Fields

Fixed vs. Variable Text Fields - Your sample label features two types of text fields: fixed text fields and variable text fields.

Fixed text is text that does not change. An example of a fixed text field is the return address on a shipping label or the "SHIP TO:" descriptor just above a customer's name and address.

A Variable text field is essentially a “place-holder.” When creating a variable text field, you do not enter the text that is displayed on a printed label. Instead, you set parameters (e.g. the number of characters) for a field in which the text can vary from label to label. An operator may enter actual text later or text can be inserted from a database, ActiveX Control, batch file or LPS pass file.

Examples of variable text fields include “place-holders” for Customer name, Company name, Street Address, City, State and Zip on a customer shipping label.

The tools for creating text fields are:

A ***Fixed Text***	Adds a text field that is a permanent part of the label (e.g., a return address).
ab ***Variable Text***	Adds a text field in which the text changes from label to label during the print run. (e.g., a “Customer Name” field for an address labels).

You can also use the **Insert | Fixed Text**...and **Insert | Text** menu commands.

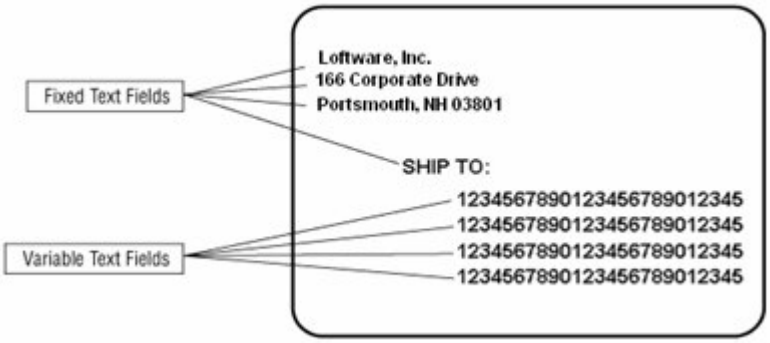

Figure 3-R: Fixed Text and Variable Text Fields

Moving Fields

Fields may be moved by these methods:

1. Selecting a field and using the arrow keys on the keyboard.
2. Select the field and dragging it with the mouse.

Creating Text Fields

Step 1: Create the Return Address Fixed Text Fields

1. Select the Fixed Text Tool  .
2. Move the mouse arrow to the upper left-hand corner of the blank label.
3. Click the left mouse button.
4. Type the following:

`Loftware, Inc.`	press **ENTER**
`166 Corporate Drive`	press **ENTER**
`Porstmouth, NH 03801`	press **ENTER** twice

Notice that after you type the first fixed text field and press **Enter**, Loftware Label Manager automatically moves the cursor down to the next line so that you can enter additional fixed text fields. The font also changes to the default font for the particular printer that you are set for. When you finish entering text, press **Enter** on a blank line to end the automatic repeat function. You can also end the repeat function by clicking on a blank area of the label or double-clicking the left mouse button.

Note: *Fixed text fields cannot be changed to variable text fields. To do this, delete the fixed field and replace it with a new variable one.*

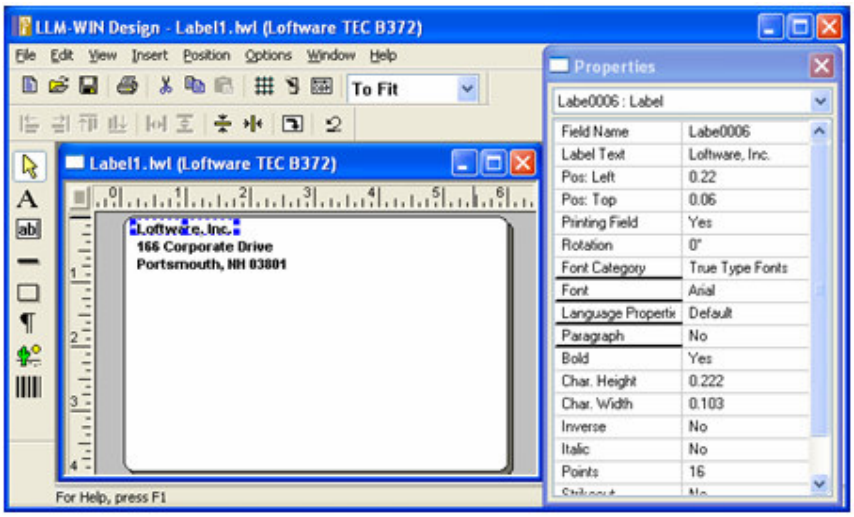

Figure 3-S: Step 1 - Add fixed text fields for return address

Note: *Loftware Label Manager displays fonts that are available on the selected printer. Depending on your printer's font sizes, your label may look different from the samples. You may also have to adjust the positions of fields slightly by moving them.*

Step 2: Creating the "Ship To" Fixed Text Field

1. Select the Label (fixed text) tool  .
2. When positioning the next fixed text field, use the screen odometer to guide. Notice how the descriptors in the screen odometer change as you move the mouse. Position the mouse so that the screen odometer reads approximately .5, 1.0 (½ inch from the left edge; 1 inch from the top). Note: Your position does not need to be precise. You can always reposition the text field later.
3. Click the left mouse button.
4. Type: `SHIP TO:` press **Enter** twice.

Step 3: Creating the Variable Text Fields

In the sample label, create variable text fields to accommodate the customer **ship to** address. Assume that each ship-to address requires four lines of text as shown in the example below. Because the fourth line of text features three variable fields (CITY, STATE, ZIP), you will actually create SEVEN variable text fields for this label:

(1) SHIP TO COMPANY NAME
(2) ADDRESS 1
(3) ADDRESS 2
(4) CITY (5) STATE (6) ZIP (7) COUNTRY

In this example, you can quickly create all variable text fields using a Loftware Label Manager shortcut feature.

1. Select the Variable Text tool  .

2. Position the cursor just beneath and to the right of the “SHIP TO:” text.

3. Click the left mouse button.

   A default 8-character variable field is shown:

The text “12345678” is a “place-holder” which shows you that the field is currently 8 characters long. The blue boxes surrounding the field are called “selection handles.” They indicate that the field is selected and may be edited by using the Properties Box or mouse.

Changing the Properties of the Variable Text Fields

Since fields are always selected after they are created, this is a good time to change the field's properties. (More detailed information on Properties is found later in this chapter.) By changing the properties, you can change the appearance of the text field, as well as its font, size, length and name (which makes them easier to identify and select). Make these changes to the field you just created.

1. Move the mouse arrow to the Properties box and select Field Name.

2. Type: `Ship To Company` and press **Enter**.

Note: *After you enter the text, Loftware Label Manager changes the name slightly to Ship_To_Company. Spaces are not allowed in field names, and so Loftware Label Manager makes this change for you. Also, note that the Input Prompt in the Properties Box is identical to the Field Name you just typed. The Input Prompt (which is displayed on the On-Demand Print Form) usually “echoes” the Field Name. (More information about On-Demand Print is found later in this section.)*

   Note that the default setting for maximum number of characters in a text field is 8. Because the names of addressees usually consist of more than 8 characters, you must edit the field to ensure that customer's names are displayed correctly on your labels.

3. Move the mouse arrow to the Properties box and select **Max # Chars**.

4. Type: `22 and` press **ENTER**.

   This allows the field to accommodate up to 22 characters of an individual's name.

   Change other properties like font type and size, if desired. You now have completed your first variable text field and your label looks like this:

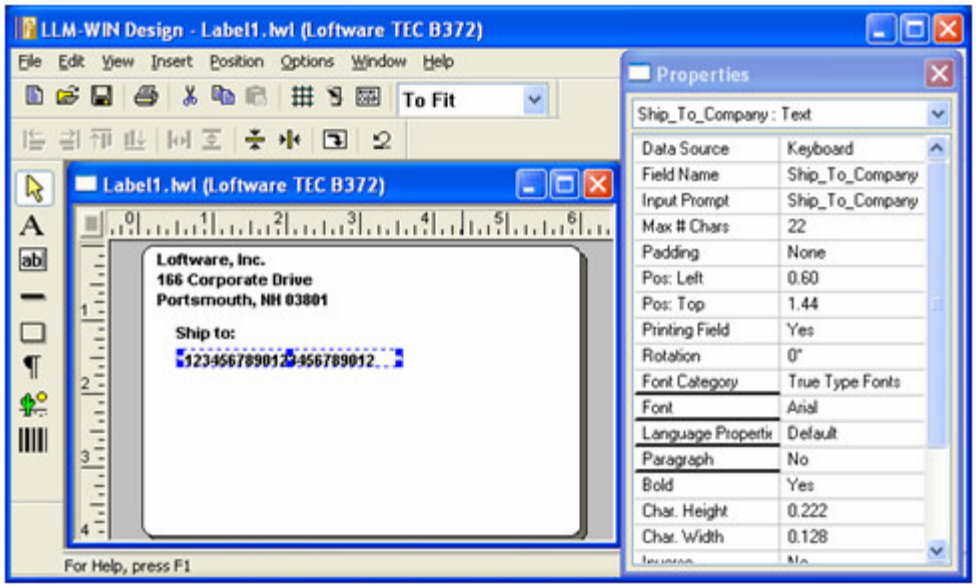

Figure 3-T: Step 3 - Our first variable text field

The next step demonstrates using Loftware Label Manager copy function to create three additional variable text fields.

Copying a Variable Text Field

1. If it is not selected, select the field you just created (the Ship_To_Company field) by pointing to it and clicking the left mouse button. Selection handles are displayed around the field.
2. Move the cursor over the field until the move cursor is shown.
3. While pressing on both the **Ctrl** key and the left mouse button, **drag** the mouse to a position directly beneath the original field (the Ship_To_Company field)
4. Release the left mouse button and the **Ctrl** key.

A "Lights the Way" Tip

Using Ctrl and Drag is the easiest way to copy an existing field!

5. Repeat the steps two more times, positioning each new field directly beneath the previous field. The label now shows four identical variable text fields.

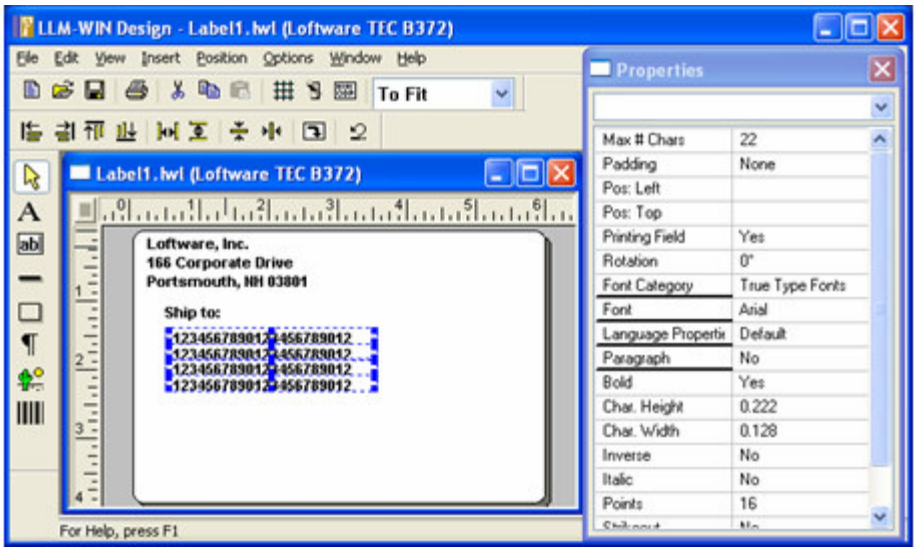

Figure 3-U: Variable fields copied using Ctrl+Drag

Setting the Field's Properties

Next, set the properties for the fields you just created by selecting the fields (by clicking on them) one at a time and setting the properties.

1. Select the second variable field (it is below Ship_To_Company) by clicking on it. Change the Field Name property to **Address1** and assign a Max # Chars of 20 characters.

2. Select the third variable field, change its name to **Address2** and assign it a Max # Chars of 18 characters.

3. Select the fourth variable field, change its name to **City** and assign it a Max # Chars of 16 characters.

Note: *More information on Properties is found at the end of this chapter.*

Creating the State and Zip Code Fields

In the previous steps, we created a label where the bottom line of a customer's address consists of three fields: City, State and Zip Code. To complete the text on our label, we will create the State and Zip Code fields.

Creating the State Field

1. Select the City field.

2. Position a new field directly to the right of the City field, using the **Ctrl+Drag** copy function.

3. Change the Field Name property to **State**.

4. Change the Max # Chars property to **5**. This entry accommodates the two-letter abbreviations used by the US Postal Service, as well as longer Province Abbreviations.

Creating the Zip Code Field

1. Select the State field.
2. Use the **Ctrl+Drag** copy function to position a new field directly to the right of the State field.
3. Change the Field Name property to **ZipCode**.
4. Change the Max # Chars property to **10**. This entry accommodates the standard 5-digit zip code used by the US Postal Service, a dash and the 4 digit zip code extension, as well as longer Postal Codes used outside of the U.S.

Creating the Country Field

1. Select the Zip Code field.
2. Use the **Ctrl+Drag** copy function to position a new field directly under the City field.
3. Change the Field Name property to **Country**.
4. Change the Max # Chars property to **3**. This entry accommodates the standard 3-digit Country Code.

When you have completed these edits, your label looks like the following:

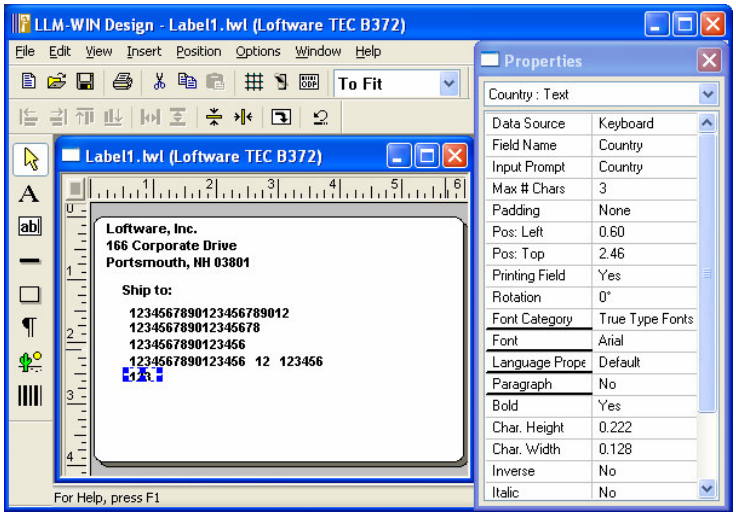

Figure 3-V: Completed variable text fields

Creating Bar Code Fields

Many industrial shipping labels require one or more bar codes to help speed up the receiving process. To demonstrate the bar code capability of Loftware Label Manager, we will add a bar code to the sample label just below the shipping address. The bar code is used to identify a "Part

Number." A bar code may be created by using the Bar code tool or the **Insert | Bar code** menu command.

Creating a Bar Code Field

1. Select the Bar Code tool  .
2. Position the cursor about 1/2 inch below and 2 inches to the right of the **Country** field; click the left mouse button.
3. Change the bar code's Field Name property to PartNo.

Note: *When a new bar code field is dropped on a label, a human readable interpretive field is also shown. These fields are treated as separate fields as far as label design is concerned but always automatically reflect the data that goes into the bar code field. If the data for the human readable field needs to be formatted differently from the bar code data, choose 'None' in the bar codes 'Human Readable' property and create a normal text field in its place. You may then use a 'Formula' data source to format the bar code data.*

Editing a Bar Code Field

Although bar code properties differ from text field properties, the methods for editing both types of fields are the same. Up until now, we have always changed the properties of fields using the Properties Box. However, it is also possible to edit some properties by resizing the field with the mouse. To demonstrate this, change the bar code using the mouse as follows:

To change the **height** of the bar code:

1. Place the cursor over the top center selection handle of the bar code field. When the cursor is positioned properly, a resize cursor is displayed.
2. Press and hold the left mouse button.
3. Drag the resize cursor straight up, about 1/4-inch; release the left mouse button.

To change the **width** of the bar code, use the same procedure:

1. Place the cursor over the right center selection handle of the bar code field. When the cursor is positioned properly, the resize cursor is displayed.
2. Press and hold down the left mouse button.
3. Drag the resize cursor to the right until the resize rectangle "jumps" to the next available size; release the left mouse button.

Note that the resize rectangle grew smoothly when we changed the height of the bar code but "jumped" to the next available size when we changed the width. In each case, Loftware Label Manager displays the next available size for the field. Code 39 bar codes grow continuously in their height but discreetly in their width (jumping to the next available line width or X-dimension). Loftware Label Manager always reflects on the label the way the selected field behaves in the printer.

The Finishing Touches

To complete our first label, we are going to add one more text field and a line. First, we add descriptive text next to a bar code field to identify what information is stored in the bar code and call it "Part Number."

Adding Descriptive Text to a Label

1. Select the Fixed Text Tool  .
2. Position the cursor to the left of the bar code field.
3. Type: Part Number
4. Press **Enter**. This moves the cursor to a new line as if you were typing a second line of text (the auto-repeat feature). You do not type a second line of text in this practice exercise.
5. Press **Enter** again to end the creation of fixed text fields.

The last change we are making to our label is to add a line to the label. Lines enhance the appearance and functionality of a label by separating the label into different sections. In the sample label, add a line between the "ship to address" and the "part number" bar code field.

Adding a Line to a Label

To create a line, use the Line Tool or use the **Insert | Line** menu command.

1. Select the Line tool from the Loftware Label Manager toolbox  .
2. Position the cursor inside the left edge of the label, between the bottom line of variable text fields and the top of the bar code. Click and hold the left mouse button.
3. Drag the cursor directly from left to right across the label.
4. Release the mouse button when the cursor is just inside the right edge of the label.
5. Set the Line Thickness in the Properties Box to **0.050**.

   Your completed label looks like the following:

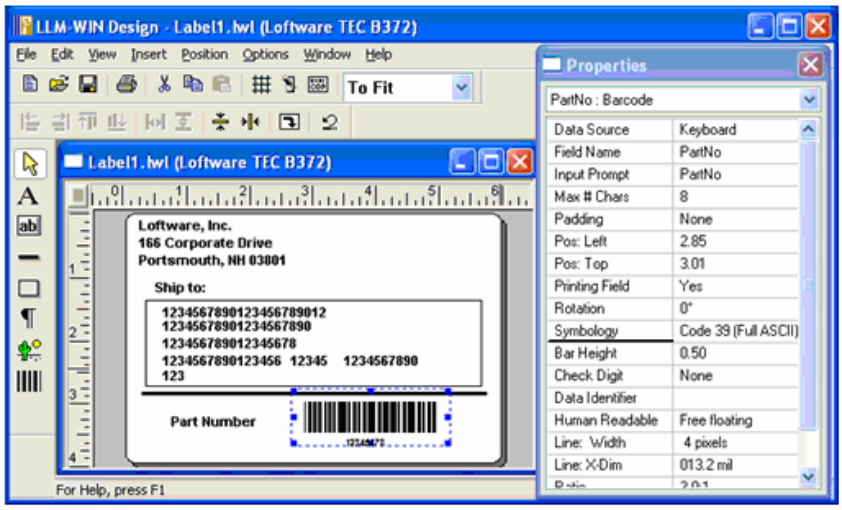

Figure 3-W: Completed label with line separating bar code from address area

Resizing Text and Line Fields

The same principles we used in re-sizing the bar code apply to the other sections of the label.

All of the fields on the label above may be re-sized by selecting or "grabbing" a handle, and dragging the handle until the field looks the way you would like.

You may enter numeric values for the field in the Property Box. This automatically re-sizes the label as well.

Saving a Label File

1. Select the **File | Save** command or click on the diskette icon from the Loftware Label Manager Toolbar.

2. Enter this file name in the dialog box: **Label1.lwl** (extension is optional); click **OK**.

Note: *When you save a label file, Loftware Label Manager may display an error message listing errors that may have occurred during the creation or editing of label fields. The most common error message informs you that a field is partly off the label. (See the following figure.) The label may not print correctly until the errors are corrected, although you can still save the label in its current form. If Loftware Label Manager detects one or more errors on your sample label, check the appropriate fields. Either delete the faulty fields, (and create new fields following the steps described earlier); or edit the fields (e.g. move the fields) using the basic actions you have learned so far.*

Test-Printing Labels

In most cases, it is best to test-print a label after creating it. This allows you to check its accuracy and general appearance.

Note: *The following test-print procedures assume that you have completely installed the program and chosen a target printer. You print the sample label on the target printer. See the previous chapter for information on how to configure printers.*

Test-Print a Label

1. Verify that the target printer is ON.
2. Select the **File | Test Print** menu command or click the **Test Print** icon from the standard toolbar. Alternatively, press **F9** or **Ctrl+P** on the keyboard.
3. View the Test Print dialog box that includes information regarding other methods of printing with Loftware Label Manager.

   Notice that your target printer is identified in the Printer box.
4. Select **OK**.

Your printer should produce your printed sample label exactly the way you designed it.

If you wish to view the On-Demand Print Form for the label you just created, do not close the file or exit Loftware Label Manager. Proceed directly to the On-demand Print section.

Note: *Fields with check digit, formula fields, and database fields are not evaluated during a Test Print. Use "On-Demand Print" to get a true label with all datasources filled in.*

Error and Warning Messages

The following may be displayed after initiating **Test Print** or after changing fonts and saving the label. (**View | Warnings and Errors** must be toggled on to display errors and warnings.)

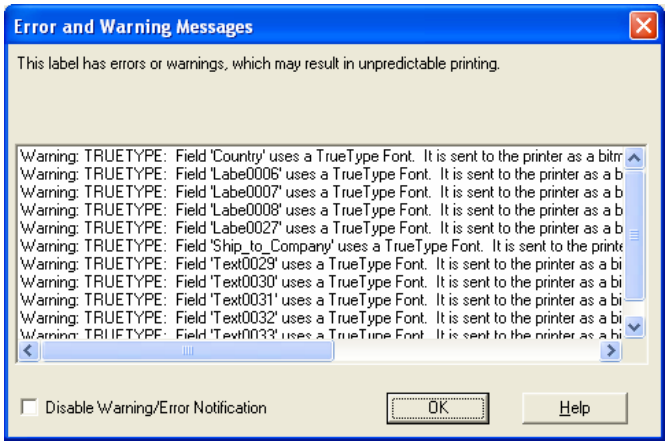

Figure 3-X: Error and Warning Messages

A description of the type of error or warning is displayed following the title. Some of the warnings are primarily informational, such as the “TRUETYPE” warning that is displayed whenever a label

with TrueType fonts is saved or Test Printed. This warning does not prevent the label from being printed, but it does let you know that the label is being printed as a bitmap, which means the printing of this label is slower. Some of the warnings may prevent printing of the label, and must be corrected before the label prints at all, or corrected before the label prints correctly. A common example of this is the "FIELDOFFLABEL" message. When designing the label, make sure that the entire field is on the label, including the blue selection handles. An example of an **Error** may be an error in a datasource formula field, such as a circular reference, which must be corrected in order for the label to print.

Disable Warning/Error Notification – When this checkbox is enabled, Error and Warning Messages are not displayed. This may be helpful if you use TrueType fonts most of the time, and you are fully aware that the printing is slower. As a general rule, however, if this box is checked and a field is off the label (for example), this information is not displayed, and troubleshooting the printing problem may be difficult. A good case in point would be a field that looks like it is on the label, but whose selection handles are off the label. A lot of time could be spent looking for this type of error, whereas if notification is enabled, the error/warning is immediately displayed.

USB Errors

If the USB Printer is connected but the port cannot be written to, a "Recoverable printer error" dialog is displayed. A printer running out of stock, out of ribbon, etc., creates this error. Once the printer error has been cleared, clicking **Retry** allows printing to continue.

On-Demand Print

Some Loftware Label Manager applications require materials-handling or operations personnel to enter label-specific data prior to a print run, usually at a data entry station. Loftware Label Manager makes data entry easy because the system automatically:

- Creates an On-Demand Print Form each time you design and save a label file.
- Updates the On-Demand Print Form each time you edit and save an existing label file.

Thus, if you successfully designed and saved the label file, you have already created a corresponding On-Demand Print Form. Keep it open to complete the next lessons.

***Note:** A Client-Server version of On-Demand-Print as well as a web enabled version is also available; see the LPS User's Guide for more details.*

On-Demand Print: Form and Application

The following sections explain how to work with the On-Demand Print Form where the actual printing takes place.

Viewing/Editing the On-Demand Print Form

1. Click on the Switch Views toolbar icon  , or select **View | On-Demand Print Form** menu command to open the On-Demand Print Form.

   The On-Demand Print Form View for sample label looks like the following:

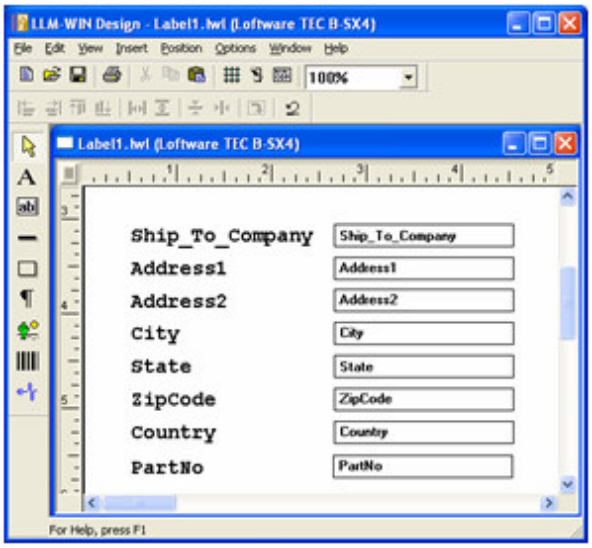

Figure 3-Y: Designing the On-Demand Print Form

The format for this On-Demand Print Form represents the Loftware Label Manager default settings. You can customize On-Demand Print Forms to meet the requirements of your applications.

- Use the **View | Label Design** menu command to return to the label design view or you can use the **Switch Views** tool from the standard toolbar to toggle back and forth between the Label Design View and the On-Demand Print Form view of the label.
- Perhaps you are printing this label in a foreign country but shipping to the U.S. You may need to have the field name in one language and the Input Prompt in another language to facilitate ease of data input with non English-speaking employees. (See Chapter 6 for examples of prompting and printing in foreign languages.)

To learn more about customizing On-Demand Print Forms, see the On-Demand Printing chapter.

Production Printing

Now that you have created a label file (label1.lwl), saved the file, test-printed it and viewed it in On-Demand Print Form View, you are ready to print an actual shipping label!

In Loftware Label Manager, you can choose any of three printing modes:

- On-Demand
- Range
- Batch

This allows virtually unlimited flexibility for your bar code label printing requirements.

We continue our example by printing Label1.LWL as a simple On-Demand Print job for one customer. On-Demand printing is where an operator uses the On-Demand Print Form we have created to type in data and print labels as needed in the On-Demand-Print Application.

Print a Label in the On-Demand Print Application

1. Click the On-Demand Printing icon  on the toolbar in Design View.

   Our sample label Label1.lwl is displayed in the On-Demand print window, as shown in the previous figure.

2. Enter some information into each field on the form. Use the Tab or Enter key to move to the next field.

3. Enter the quantity of labels to print.

4. Click on the Printer Icon  to print, or choose **File | Print** menu command.

Exiting the Label Design or ODP Application

Use the **File | Exit** menu command to exit the Loftware Label Manager label design/ODP application, or click on the **Close Button** Icon.

More Information on Properties

Properties are characteristics that define the appearance and behavior of the fields on a label. Properties that affect the appearance of fields include Font, Point Size, Bar code symbology, Bar Height and Input Prompt. Properties, which affect the behavior of fields, include the data source (operator entry, database, incrementing field, etc.) and the data entry rules ("must fill," "numeric only," etc.).

At its core, label designing is the process of adding fields to a label and setting the properties to match your label specifications. Loftware Label Manager makes it easy to design and edit properties with the use of the Properties Box.

The Properties Box

The Properties Box is the most useful editing tool in the Loftware Label Manager Design program. It displays all appropriate properties for the field on which you are working. Examples of properties include field name, field height and width, bar code symbology, font category, font size and so on.

From the Properties box, you can:

- View the current values for all the properties of the selected field (or common properties when selecting two or more fields)

- Edit the values of properties, one field at a time, or several fields simultaneously.

The Properties box is especially useful because you view changes on your label as you enter them in the Properties box. For example, if you change the height of a bar code in the Properties box, Loftware Label Manager adjusts the height of the bar code on your screen immediately after you hit Enter or Tab to the next property.

Similarly, whenever you use the mouse, the Edit functions (on the Edit Toolbar) or Loftware Label Manager Positioning Tools to change the location or appearance of a field, the Properties Box immediately displays the results of your changes.

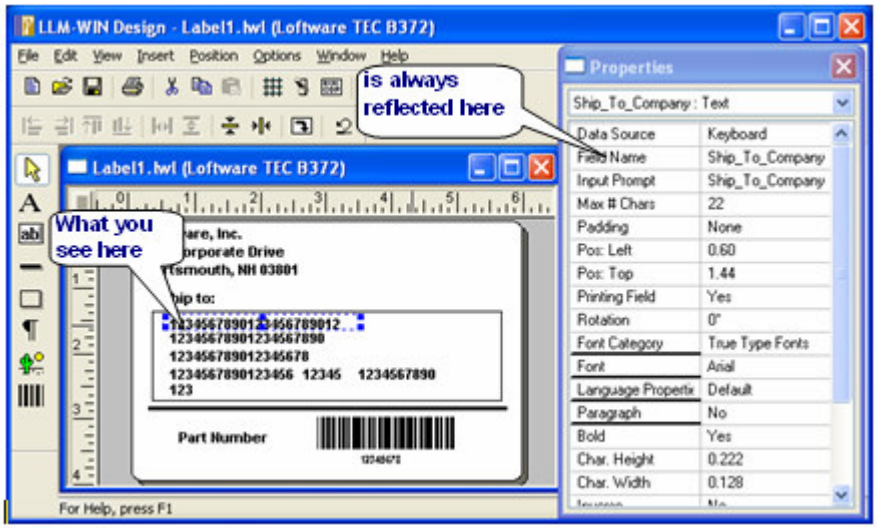

Figure 3-Z: Selected Variable Text Field and corresponding Properties Box

The Properties box is printer "smart." The entries in the Properties box and the values that can be entered into those properties depend upon the selected printer. The Properties box reflects the capability of the printer for which you have chosen to design a label.

Note: *The available symbologies vary depending on the selected printer.*

Example: If your printer supports character rotation, the Character Rotate property is displayed in the Properties box. If the printer does not support rotated characters, the property is not displayed in the Properties box.

The available sizes at which you can print bar codes match the resolution (dpi) of the selected printer.

Two printers are rarely alike, so this section is an introduction to the basic display and editing characteristics of the Properties box. Once you are familiar with the basics, editing properties is easy, regardless of the printer(s) you are using.

Parts of the Properties Box

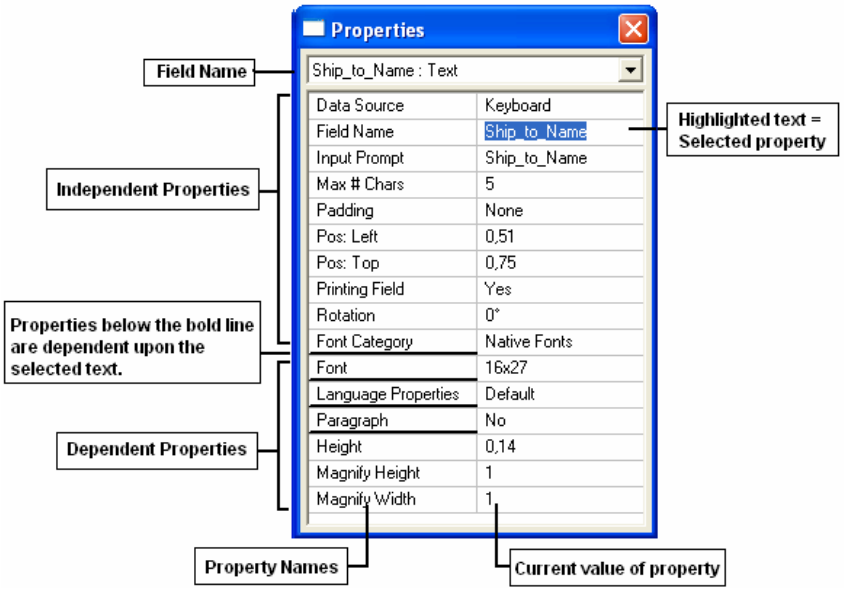

Figure 3-AA: Text field Properties Box

Field Name - The name of the selected field is always at the top of the Properties Box. If multiple fields are selected for editing, this space is blank. You can also select a field for editing by pressing the drop down arrow on the right side of the field name window and choosing the name of the field you wish to edit.

Note: *Field names may contain dots (i.e., customer.big), however, be aware that field names with dots cannot be used in formulas. (See the Data Sources chapter.)*

Properties Box Properties

Independent and Dependent Properties: Above and Below the "Line"

When you are working in a text field or a bar code field, a bold horizontal line is displayed roughly in the middle of each Properties Box.

In a Text Field

- The properties displayed above the first bold line describe independent data. These properties are common among all text fields. Note that the last entry above the line is Font Category.
- The properties displayed below the fourth bold line describe dependent data. These properties are dependent solely upon the font style listed above the line and describe characteristics that are unique to that particular font. When you select a different font, the dependent properties change automatically to match the characteristics of the new font.

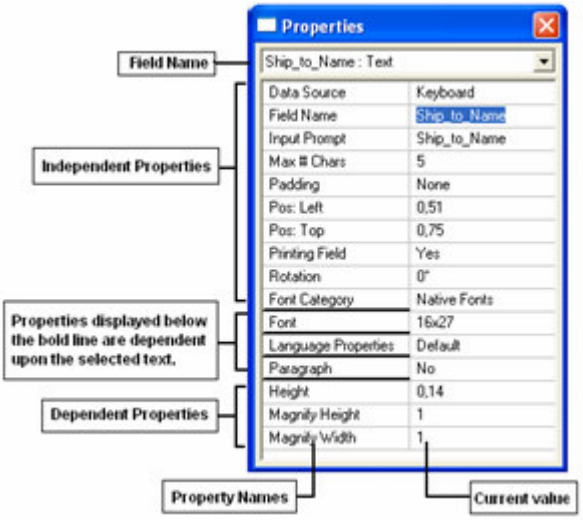

Figure 3-BB: Independent and Dependent properties in a text field.

In a Bar Code Field

- The properties displayed above the bold line (independent data) are common among all bar code fields. Note that the last entry above the line is Symbology.
- The properties displayed below the line (dependent data) are dependent solely upon the bar code symbology that is displayed above the line. They describe properties that are unique to that particular symbology. When you select a different symbology, the dependent properties change automatically to match the characteristics of the new symbology.

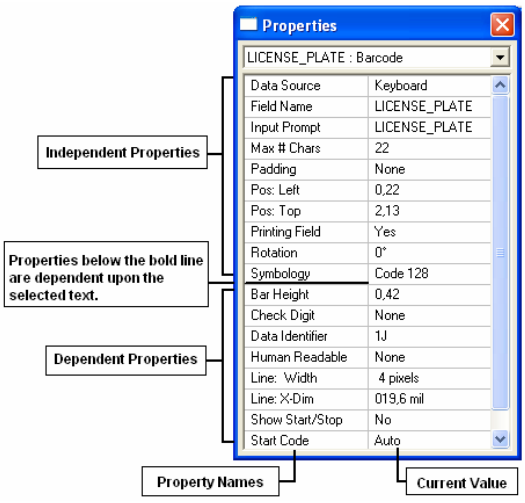

Figure 3-CC: Properties Box for a Bar Code field

Note: *The horizontal line is displayed only in Properties Boxes for text fields and bar code fields. Lines, boxes and images do not have dependent properties.* ***Note:*** *Because available properties are printer-dependent, this User's Guide does not define individual properties.*

Non-Printing Fields

At times, you may want to create a field that does not print on the label, but is seen by a user in the On-Demand-Print Form. E*xample*: *1.)* You have certain label printing instructions that you want seen by the operator keying in the label information, but this information is not printed out on the label. *2.)* You have a key field that draws from a database, but does not need to be printed on the label. *3.)* You are printing labels and want to the Input Prompt to be displayed in a foreign language to assist the operator. Non-Printing fields may be created in two ways:

- You may select "no" from the **Printing Field** property in the Properties Box.
- Fields created in the On-Demand Print Form Window are non-printing fields.

Note: *See the On-Demand Printing chapter for more information and examples of non-printing field use.*

The Properties Box Window

You can display the Properties Box in a window, which "floats" on top of your labels. Using this technique, the properties for the selected field or fields are always visible and you can interactively edit one field or multiple fields.

The Properties box window offers these advantages to the user:

- Viewing the properties of the selected field(s) in the Label Design area.
- Editing directly the properties of the selected field(s).
- Editing multiple fields simultaneously, even fields of different types (e.g., a text field and a bar code field).
- Editing is reflected instantly on your label.

Displaying the Properties Box Window

Use the **View | Properties** menu command to display (or hide) the Properties Box Window.

The Properties Box Window is displayed wherever it was last positioned, usually to the right of the label. To move the Properties Box Window, click on the Windows title bar and drag the box to the desired location. This new position is remembered after you exit Loftware Label Manager.

A "Lights the Way" Tip

Moving and Resizing the Properties Box

- You can move or resize the box at any time by using the point-and-click methods
- To move a Properties box, drag the title bar of the Properties box until the box is in the desired position.
- To re-size a Properties box, move the cursor along the frame of the Properties box until the resize cursor is displayed, click and drag the edge in the direction indicated by the resize cursor. This can bring properties that have been truncated into full view.
- Loftware Label Manager always remembers the new size and position of the Properties box, even after exiting LLM and returning for another session.

Properties Box Editing Basics

You can use a Properties box to quickly and easily edit the properties of any label field. The following examples assume you are using the Properties box window.

Editing the Properties for a Field

1. Select the field you wish to edit by clicking on it.
2. From the Properties box; click on the property you wish to edit.

After selecting a property, current information about that property is displayed in the editing window.

If a list of options is available, Loftware Label Manager displays it in a drop down list. Click on the down arrow button, and select from the list to make the desired changes.

If an ellipsis button is displayed, click on it to access a dialog box with more settings to choose.

If neither a down arrow or an ellipsis button is displayed for a field, you can begin typing immediately to enter the appropriate value. Loftware Label Manager displays your keystroke actions in the editing window.

Properties Box Options

Padding

Loftware Label Manager Design provides the Padding setting in the Properties box for adjusting the location of the information in the text field on the label. Padding" setting choices are:

None – Default option, whereby the characters begin on the left side of the field.

Leading Zeros – Zeros fill in all unused character spaces before the first character of the field. E*xample:* The Max # Chars in the Ship_To_Name field equals 22, and the entry name for this field is 6 characters long. With the Leading Zeros option chosen, there are 16 zeros printed before the 6 character company name.

Leading Spaces – The result is the same as outlined above, only instead of zeros, there are spaces before the name in the field.

Trailing Spaces **–** The result is similar to the previous option, except that the spaces are inserted after the name rather than before.

Center with Spaces **–** This option centers the text in the field.

To center text in the field:

1. Click on "Padding" and the drop-down box to view the options:

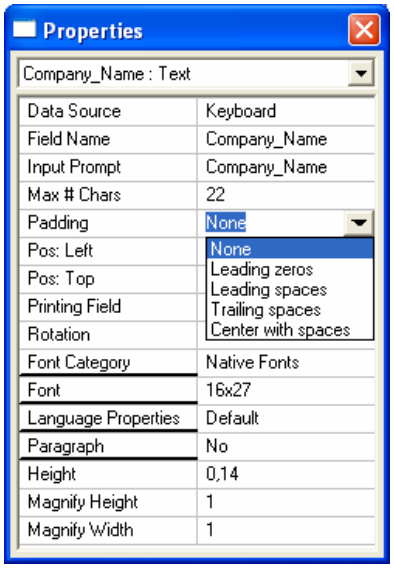

Figure 3-DD: Properties Box displaying Padding Options

2. Select "Center with Spaces" from the list.

When printed, this field is centered on the label; however, there are some finer points to keep in mind. In the example, the maximum number of characters (Max # Chars) for this field is 22, and the Ship_To_Name for this label has only six letters (ABCDEF).

Loftware Label Manager subtracts the number of characters in the field (6) from the Max # Chars, (22), and divides the remainder (16) by 2 (8). Thus, in this case, the field is printed with 8 spaces, followed by the Ship_To_Name (6 letters), followed by 8 more spaces. The Ship_To_Name is centered precisely in the field. This works great if the result of the subtraction of the Max # Chars from the number of characters in the field is an even number. However, if the result of the subtraction is an odd number, then the division by 2 results in a remainder. Since Loftware Label Manager does not adjust text in half-space increments, an odd number creates a centered field that is one space off. The next figure displays the printed results of two labels with an odd and an even number of characters.

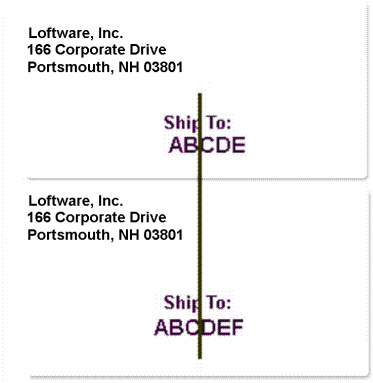

Figure 3-EE: Labels utilizing the padding centering option.

***Note:** The information in the field is not shown as centered when displayed in Print Preview; however, it does print as specified.*

More about Centering

The centering of text is dependent upon the type of font chosen, and the printer you are using. Some fonts are Proportional, while others are Monospace.

Proportional Fonts – A Proportional font is one in which each character is a different size. The spacing is proportional to the character size. For example, five W's take up much more space than five i's.

WWWWW

iiiii

Monospace Fonts – All Monospace fonts are evenly spaced. Using the previous example, the W's and the i's take up the same amount of space.

WWWWW
i i i i i

The "Center with Spaces" option in Padding only works with any accuracy with Monospace Fonts. Since the "Center with Spaces" option is based upon the number of characters as opposed to the physical width of the field and characters, attempting to use centering with Proportional Fonts creates unpredictable results. The only way to know for sure whether or not a font is Proportional or Monospace is to print with it. (Do not rely on the view on your screen) Even though you may be able to choose one of these options from the 'Spacing' property in the Properties Box, the font itself or the printer may not support the option you have chosen. Thermal Transfer printers generally have proportional fonts. A visual example follows using TrueType fonts:

Courier New is a Monospace Font. In the figure below, the top field has 20 Max # Chars, Padding set to "None", and 20 W's typed into the On-Demand Print Form. The next field also has 20 Max # Chars, Padding set to "Center with Spaces", and 4 W's typed into the On-Demand Print Form. The results are seen as quite accurate; as the text in the second field is well centered:

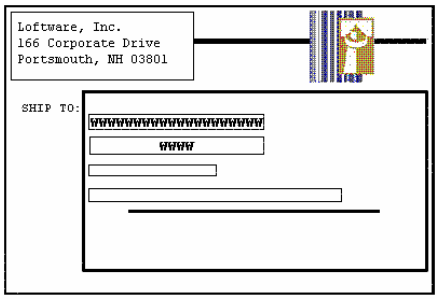

Figure 3-FF: Courier New font with "Center with Spaces" Padding Option in 2nd Field

If the font is changed to Arial; a Proportional Font, and the same Padding options as well as the same typing is used, the result is a field that is not centered correctly:

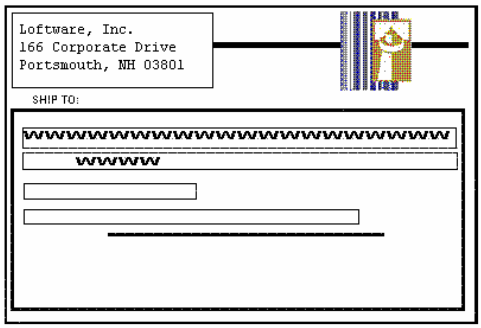

Figure 3-GG: Arial font with "Center with Spaces" Padding Option in 2nd Field

It is to your advantage to experiment with centering using your particular printers, and using various fonts, to see what combinations work best in your application.

Edit a Bar Code Field Using the Properties Box

As you become familiar with the Loftware Label Manager Properties Box, there is a variety of convenient ways to edit label fields. To help you get started, two examples follow. Both examples use the same label; so after completing Example 1, proceed directly to Example 2.

Note: *Before proceeding with the example, make sure the properties box is visible. If it is not visible, use* ***View*** **|** ***Properties*** *to show it.*

Example 1: The Bar Code Field

Follow these instructions to:

- Create a new bar code field.
- Assign a name to the field.
- Set maximum character length for the bar code.

- Change the bar code line width.
- Change the X-Dimension (length) of the bar code.

Create the Bar code

1. Press the Page Icon to open a new blank Loftware Label Manager label screen.
2. Select the bar code icon  from the Loftware Label Manager Toolbar.
3. Position the mouse indicator near the upper left-hand corner of the label.
4. Click and drag in the label design area (down and to the right) until the field outline box is approximately 1/2" high and 2" wide, release the left mouse button

Note that:

- A Code 39 bar code (the default symbology) is displayed on the label. All dependent properties (below the bold line) are thus characteristics of Code 39.
- The selection handles show that the new bar code is selected automatically.

Change the Properties of the Bar code

Give the field a meaningful name

1. Select Field Name in the Properties Box.
2. Type:PART NO.

Set maximum number of characters for the bar code

1. Select Max # Char. In the Properties Box. (Note that the default setting is 8 characters).
2. Type: **15**

This sets the bar code's maximum number of characters to 15. (Both the bar code itself and the adjacent "human readable" text reflect this change.)

Change the X-Dimension

1. Select X-Dimension in the Properties Box.
2. Select the Options arrow  in the text box (top of Properties Box).
3. Select a new value for X-Dimension.

Note: *Changing the X-Dimension also changes the Line Width property. Line Width and X-Dimension are two different ways of viewing the same property. For UPC/EAN bar codes, the Properties Box also features "Percent Nominal," a third way to view the line width of the bar code.*
Note: *If the bar code you have created does not fit on the label, try setting the rotation to 90º.*

Example 2: The Variable Text Field

When you created the bar code field in Example 1, you also created a human readable text field at the same time. You use the Properties Box Window to make changes to this field in Example 2. Follow these instructions to:

- Move the field to a new position.
- Change the font.
- Magnify the width of the field.
- Center the field

Move the Variable Text Field

1. Move the human readable text field away from the bar code to provide more "breathing room" while you edit the field.
2. Select the human readable text field.
3. Point at the field. When the movement cursor is displayed, press and hold the left mouse button.
4. Drag the field to a new position (slightly below its original position). Rrelease the mouse button.

***Note**: You can also use the arrow keys on the keyboard to move fields. Multiple fields may be selected by holding down the **Control Key** on the keyboard as you **select**.*

Change the Font

1. Select the **variable text field**, if it is not already selected.
2. Select **Font** from the Properties Box.
3. Select the **Options** arrow in the text box; and then select a dot font from the list of options.

   Note the change in the appearance of the font on the label.

***Note**: Dot fonts feature names such as 7 x 9 or 16 x 24.*

Magnify the Width of the Human-Readable Text Field

You magnify the width of the human readable field using the **"Double-Click"** function (a Loftware Label Manager shortcut feature). (Remember this option depends on your font selection.)

1. Select **Magnify Width** from the Properties Box. The default magnification is 1.
2. Double-click the left mouse button. Note that the width of the field on the label doubles.

A "Lights the Way™ Tip

Using Double-Click to change a Property Value

When you select a property that features a list of options, as indicated by a down-arrow in the editing window, you can double-click the left mouse button on the property name to advance the property to the next available choice.

A Final Word about the Properties Box

This section has introduced you to the Loftware Label Manager Properties box. Once you are familiar with the basic purpose, layout, and editing capabilities of the Properties box, it is easy to customize your labels. Several of these customization features are described in the next chapter.

Loftware recommends you practice manipulating fields using a variety of methods, including the Properties box as a way to develop a method that best fits your label design style.

Summary

This chapter presented a walk through of the opening, designing, and printing of a simple label. In the process, we learned the skills and terminology necessary to build a label, such as:

- Using the menu bar and toolbars
- Using the Label Wizard and Label Properties
- Using the Fixed Text tool to rapidly create the permanent text descriptors on our label
- Creating variable text fields that are "place-holders" for information entered at print time
- Working with the Properties box to change the appearance and characteristics of a field
- Making a bar code field and drawing a line
- Resizing a field with the selection handles by using the mouse and seeing how LLM displays the next valid size for the field
- Viewing the On-Demand Print Form associated with the label
- Saving and loading label files
- Test printing a label from the Label Design application
- Printing in the On-Demand Print application

Chapter 4 Advanced Techniques

Introduction to Advanced Techniques

Now that you have created a label and printed it, this chapter takes you further into design and label creation techniques. These techniques show you how to customize your label further, to ensure that it meets with your design and compliance standards. Advanced bar code information is also included.

Topics covered in this chapter include:

√ Editing Multiple Fields

√ Creating Multiple Bar codes

√ Creating a .lst file for constraining field names

√ Special Bar Code Properties

√ Fonts, Images, Lines, and Boxes

√ Paragraph Text Fields

√ Creating a Constrained Field List

√ Printing High ASCII Characters

√ Using Code 128 and MaxiCode

Editing Multiple Fields Simultaneously

Loftware Label Manager allows you to edit two or more similar fields simultaneously using the Properties box window. Follow instructions below to:

- Create a new bar code field.
- Copy the bar code field.
- Edit the properties of both bar code fields simultaneously.

Creating Multiple Bar Codes

On a new blank Loftware Label Manager label screen:

1. Select the bar code icon  from the Loftware Label Manager (LLM) Toolbox.
2. Select a starting point near the upper left-hand corner of the label.

3. Click and drag the mouse in the label design area (down and to the right) until the field outline box is approximately 1/2" high and 2" wide; release the left mouse button.

A bar code field with its associated human readable text field clicks into place.

Note: *Loftware includes a "Bar Code Wizard" that is most useful in adding a variety of symbologies to your label. Information on the Bar Code Wizard may be found in the Templates and Wizards chapter in this guide.*

Copying the Field

With the original field selected (selection handles visible):

1. Move the cursor over the field until the movement cursor  is shown.
2. While pressing on the **Ctrl** key, drag the mouse down a half-inch to the right of the original bar code field.
3. Release the left mouse button and the **Ctrl** key.

A duplicate bar code field clicks into place below and to the right of the original.

Selecting both Bar Code Fields

1. Click the left mouse button on the first bar code (**not** the adjacent human readable field) to select the bar code.
2. While pressing on the **Ctrl** key, click on the duplicate bar code field (not the adjacent human readable text field).

Both bar code fields are selected simultaneously, independent of their accompanying human readable text fields.

The Properties box displays all properties that are shared by both fields. (If the Properties box is not visible, select **View > Properties** from the menu bar.)

You are now ready to simultaneously edit the properties of both bar codes. Begin by aligning both bar codes to a specific position on the label.

Aligning the Two Bar Codes

1. Select **Pos: Left** from the Properties box.
2. Type **.** 5 (for 1/2 inch).
3. Press **Enter**.

Both bar codes click into place simultaneously. The left edges of both fields are aligned precisely at the .5-inch position on the label. You may also use the Left Alignment tool to accomplish this task.

Changing the Line-Width Ratio Simultaneously

1. Select Ratio in the Properties box.
2. Pull the list down and choose a different ratio.

Note that the ratio automatically advances to the chosen setting for both bar codes.

A "Lights the Way" Tip

Facts about Multi-Field Editing

- You can select any number of fields for simultaneous editing following the steps outlined above.
- When you select two or more similar fields, such as bar codes, remember that the Properties box displays only properties that are shared by *all* the selected fields.
- If the selected fields have the same value for a specific property, the value is shown in the Properties box; otherwise, the value is blank. E*xample:* If bar heights for 2 selected bar codes are not identical, the Bar Height entry in the Properties box is blank. If you enter a new value in to the bar height property, the Properties box displays the new value.
- You can select dissimilar fields for simultaneous editing. *Example:* Select two bar codes and two text fields. You may see that the only properties you can change simultaneously are "Pos:Top", "Pos:Left" and "Rotation".

Special Topics Related to Bar Code Properties

Several **Loftware Label Manager** editing features are unique to bar code fields. Here are some suggestions that help you get the most out of the bar code editing functions when using Properties boxes:

- **Interdependent Properties** Some properties are dependent upon other properties for their values. For example, when you change the Line Width property on a bar code, the X-Dimension value and % Nominal value (if available) change automatically.
- **% Nominal** For some bar code symbologies, (e.g., the EAN and UPC series), Loftware Label Manager displays a "% Nominal" value. Keep in mind that some printers (e.g., a 5-mil printer) can only print values that fall within a specified range (e.g., 37%, 75%, 113%, 150%, etc. of nominal).

For more information on your printer's print density or dot size, refer to your printer documentation.

Facts about Fonts

Remember that many Loftware Label Manager features are printer-dependent. In fact, the Loftware Label Manager graphical designer changes the appearance of a label and its available fields and properties to match the capabilities of the selected printer. This chameleon-like behavior is easiest to see with bar codes. The available ratios for a Code 39 bar code, for example, are determined by the selected printer.

With fonts, different printers not only cause the Loftware Label Manager to display different properties, but they also feature fonts that have different behaviors. For example, standard Windows printers (e.g., a LaserJet printer), normally support TrueType fonts. TrueType fonts are sized by selecting a "point size." As you change the point size, the characters get larger or smaller.

With TrueType fonts, you cannot control character width. Instead, the width automatically changes as the height changes due to a preset "aspect ratio." In contrast, some thermal transfer printers support "Outline" fonts (or Vector fonts). When working with these fonts, you can change both the height and width independently. This allows you to create "tall, skinny" characters or "short, fat" characters.

Note: *Remember that when you design labels with Loftware Label Manager, the characteristics of the printer govern font capabilities in the label designer.*

Loftware Label Manager supports four types of fonts:

- Dot fonts
- Pointable and TrueType fonts
- Hybrid fonts
- Flexible fonts

In Loftware Label Manager, dot fonts, pointable fonts, hybrid fonts and flexible fonts can be accessed by selecting Native Fonts as the **Font Category** in the Properties box drop-down menu. To select Windows TrueType Fonts, choose TrueType Fonts as the **Font Category.**

Note: *When resizing text fields, note that different types of fonts behave differently. This is because different types of fonts have different resize rules. As always, the design screen is reflecting the capabilities of the selected printer. It is strongly suggested that you familiarize yourself with the different types of fonts your printer supports. You discover that some fonts are more useful than others are, depending on the nature of your label.*

Dot fonts - Characters printed in dot fonts are displayed as a series of dots. Dot fonts are a predetermined size and cannot be resized. Many printers have the ability to "magnify" dot fonts.

In Loftware Label Manager, Dot fonts usually have names which indicate their size, such as "7 x 9" or "16 x 22." Dot fonts have Font Height, Magnify Height and Magnify Width properties. When you select a dot font, you can magnify the height and the width independently of the font using the Magnify Height and Magnify Width properties in the Properties box or by resizing the text field with the mouse.

As you change the size of the font, Loftware Label Manager updates the Font Height property to display the height of the font. If you change the Font Height property, Loftware Label Manager automatically changes both the height and the width of the characters to provide a normal aspect ratio.

If you want to create "tall, skinny" characters in a dot font, adjust the Magnify Height and Magnify Width properties. If you want to make the text larger, but preserve its proportion, use the Font Height property.

Note: *When magnified, dot fonts print with ragged edges.*

Pointable and TrueType Fonts - Pointable and TrueType fonts are scaleable printer fonts and standard Windows fonts. Unlike dot fonts, you cannot independently control the height and width of Pointable and TrueType fonts. You can, however, increase or decrease the size of the characters.

In Loftware Label Manager, Pointable and TrueType fonts feature Font Height and Point Size properties. These fonts always print with smooth edges, regardless of the degree of magnification.

More information regarding fonts

For maximum print speed when using TrueType fonts	Print via a parallel printer interface, as TrueTypes are sent to the printer as a bitmapped image and are therefore much slower than using the printer's internal native fonts.
For printer TrueType support	Refer to On-line help under your specific printer type for information on downloading TrueType fonts to your printer.
To change font size in Loftware Label Manager	Edit the Font Height property or resize the field by selecting the field with the left mouse button and dragging the outline to a new size.
Online Help	Look under specific printer type being used for information on downloading TrueType fonts.

Hybrid fonts - Hybrid fonts are associated with thermal transfer printers and are a cross between Pointable and Dot fonts. Like point fonts, hybrid fonts are available in a predetermined set of point sizes. Like dot fonts, each point size can also be magnified.

In Loftware Label Manager, hybrid fonts feature Font Height, Point Size, Magnify Height, and Magnify Width properties. As with dot fonts, use the Magnify Height and Magnify Width properties to independently size character height and width or use the Font Height property to change the size of the characters while maintaining the proper aspect ratio.

Note: *Most printers have an internal scaleable font that resembles a TrueType Arial font. Use this font instead of a TrueType font whenever possible. Your labels print* ***much*** *faster this way.*

Flexible fonts - Flexible fonts (also called Vector fonts or Outline fonts) can be scaled to any size and are native to most printers. These are the best choice for quality and speed. Usually, you can size the character height and width independently in a flexible font. Use these fonts whenever possible to achieve a balance between download speed and print quality.

In Loftware Label Manager, flexible fonts have Character Height, Character Width and Point Size properties. Choosing a point size sets both the height and width to a preset aspect ratio. To create

"tall, skinny" characters, make appropriate edits to both the Char Height and Char Width properties. When printed, flexible font characters retain their smooth edges regardless of their size.

To change character size in LLM, edit the **Magnify Height** and/or **Magnify Width** properties independently.

For information about printing symbols and international characters, refer to the International Printing chapter.

For more information and examples on Monospace and Proportional Fonts and spacing, see "Creating a Label," the Properties box Options section.

Note: *When working with fonts, note the Spacing property. Some fonts are Monospace and some are Proportional. In Monospace fonts, all characters are the same width. Proportional fonts have a different width for every character. TrueType fonts are usually proportional. Proportional fonts read better on the printed label. It is harder to predict envelope size, as it varies with the data.*

If you use any of the Justify properties, it is best to use Monospace fonts. More information on this is found in the previous chapter.

Properties for Paragraph Text Fields

The Loftware Label Manager product features paragraph text field support for variable text fields. This powerful feature is standard in all Loftware Label Manager products. Loftware Label Manager parses data input at print time, automatically splits, and justifies the text at appropriate word breaks. This is useful for warning messages coming from a file or database that you want to automatically "wrap" to the next line(s).

Paragraph text fields maintain the same set of field attributes supported by traditional Loftware Label Manager text fields:

- Rotation
- Max # characters
- Position
- Font Category
- Font

Additionally, paragraph text fields support:

- Interline spacing
- Justify
- Max # lines

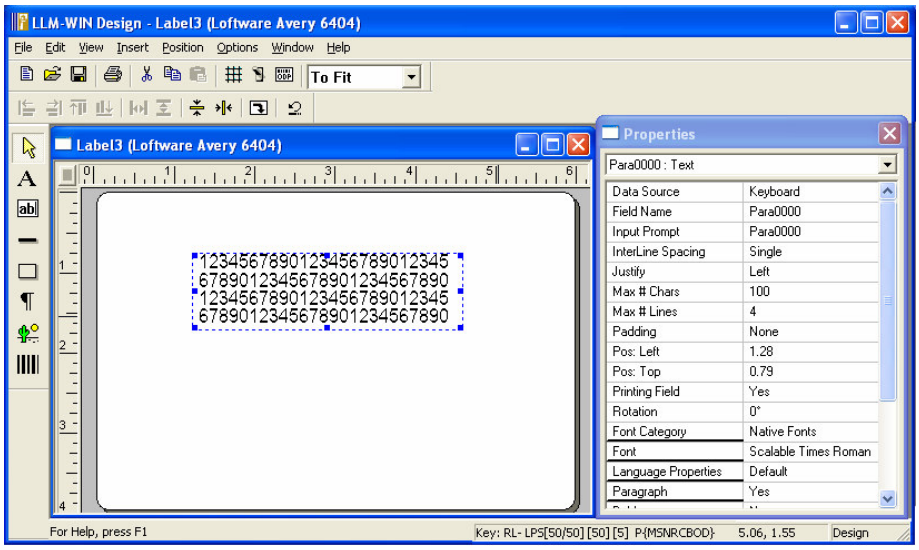

Figure 4-A: Paragraph Text field with the Properties Box displayed

Interline Spacing Interline spacing is the spacing size between lines of paragraph text. The values for interline Spacing are: Single, Double, Triple, or Quadruple.

Loftware Label Manager determines this value from the size of the font, which is the character height in addition to the envelope that includes the ascender (height above the character) and descender (height below the character) spacing. For example, the total height of the envelope for the character "a" would be the same for the character "P" or the character "g".

Justify This property determines what justification the paragraph is going to exhibit at print time. The justification values are as follows: left, right, and center. As stated in the preceding font section, Monospace fonts justify much better than Proportional fonts.

Note: *Justification for Paragraph text fields is determined from the context of the size of the field, not the context of the size of the label. Fields within the label can be accurately justified if you know the approximate amount of data you are going to send at print time.*

Max # Lines This property determines the maximum number of lines that a paragraph can span. This property is tied to the Max # Chars property. It is important to determine a workable value for these two properties. For example, if you choose 100 for the Max # Chars and 4 for the Max # Lines, Loftware Label Manager automatically splits your data input into a maximum of 4 lines with up to 25 characters each. If there are wide discrepancies, or variations in the amount of data sent, select the value that takes into consideration the maximum amount. This alleviates situations where too much data is sent, causing possible data truncation.

Note: *Paragraph Text fields maintain the same set of data sources available to Loftware Label Manager Text fields. Please refer to the Data Sources chapter for complete information.*

Creating a Paragraph Text Field

There are two methods to add paragraphs on your labels from the Loftware Label Manager designer:

Click on the Paragraph Tool  from the Loftware Label Manager Toolbox, and then drop a paragraph text field on your label.

OR…

Modify the "Paragraph" attribute in the Loftware Label Manager Properties box for a variable text field to "Yes."

Note: *Field position is important to understand for paragraph text fields since the justification attributes (left, right, and center) should be considered for all applications that utilize paragraphs.*

Processing Paragraph Text Fields at Print-Time

Paragraphs are displayed within the Loftware Label Manager WYSIWYG or GUI designer. It is only during a production print run, however, that Loftware Label Manager knows what data is going to be processed and printed.

Not all printers supported by Loftware Label Manager have internal paragraphing capabilities. Therefore, Loftware Label Manager automatically parses the data input at print time and splits the text into appropriate sub-fields. These sub-fields are then justified and sent to the printer.

Images and Graphics

The Loftware Label Manager has a powerful image importer and manipulation utility. It directly reads over 18 popular image file formats including .BMP, .JPG, .GIF, and .TIF.

Important*: If the currently selected printer does not support graphic images, the graphics creation and editing functions are disabled.*

Adding a Graphic Image to a Label

1. Choose the Image Tool  from the Loftware Label Manager Toolbox.
2. Place the position marker on the label where you want the top left corner of the image to be located (refer to the Screen Odometer for positioning data).
3. Click on the label where you want the upper left corner of the image placed.
4. In the dialog box, select the file name of the graphic image you wish to add to the label.

Note: *Loftware has some stock images in the images folder which may be used freely. If you need other images, add them to the folder for easy access. Loftware does not provide additional images.*

---

5. Select **OK**. The graphic image snaps into place on the label.

Note: *The default Max # Chars for images is 12. It is necessary to increase this attribute if you plan to specify full path names for your variable images.*

Sizing a Graphic Image on a Label

The following steps describe how to change basic dimensions of the image area only.

1. Select the graphic image field you wish to edit.
2. Move the mouse arrow to the Properties box and select the property you wish to edit (Image Size Rule, Max # Chars, Pos:Left, Pos:Top, Rotation, Size:Height, Size:Width).
3. Use the keyboard and/or mouse to change the dimensions of the frame.
4. Press **Enter** or position the mouse arrow outside the Properties box and click the left mouse button.

Note: *The Loftware Label Manager edit functions allow you to change the basic dimensions (height, width, rotation) of a graphic image field. To edit the image itself, use a graphic editing program such as Windows Paintbrush or Paint Shop Pro.*

Special Properties of Image Fields

Image fields behave similarly to other types of Loftware Label Manager fields. In other words, when you select an image field, the Properties box displays values similar to those found in other fields **(Data Source, Input Prompt, Pos: Left, Pos: Top, etc.). T**o change values, follow the same editing steps described earlier for bar code and text fields.

Note: *The default screen display for images is monochrome. If you wish to display color, enable "Show Images in Color" in the* ***Options | Preferences | Design Options*** *tab.*

Two properties that are unique to image fields require special attention:

- Image Size Rule
- Dither Method

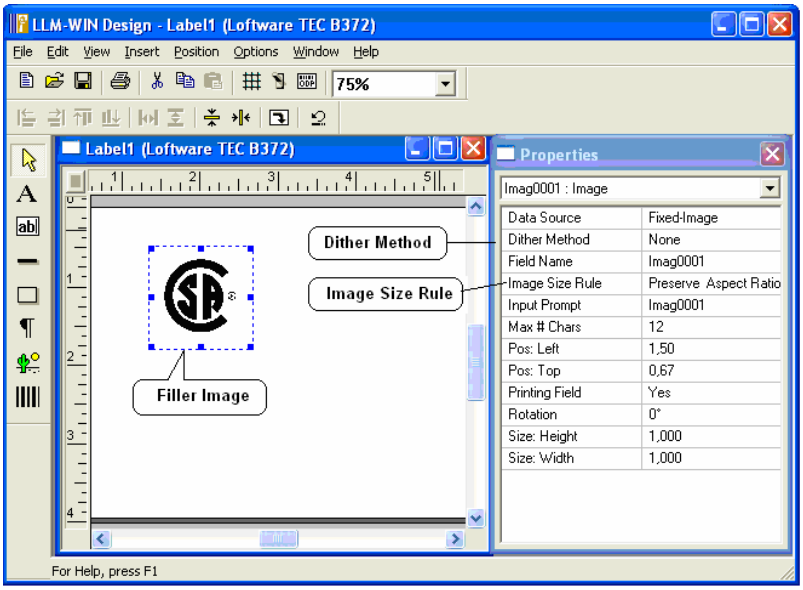

Figure 4-B: Image Properties Box

Filler Image - A filler image is a representation of an image that is displayed on the screen. If the data source for the image is "fixed," then the filler image is the image that prints. For other data sources, where the actual printed image is determined at print time, the filler image acts as a 'place-holder' which defines the size of your image, the dithering method and other properties.

When you select the Image Icon and click on the label, the Loftware Label Manager displays a list of currently available image files.

Under the system default, when an image other than the original is selected, the new image is displayed in the same filler image area on the label. Loftware Label Manager automatically resizes the new image to fit the dimensions of the image box. When sized to fit, however, the new image may be "stretched" so that normally smooth lines are jagged. The image may be so compressed making it illegible that a circle may become an oval; a square may become a rectangle; and so on.

To deal with these issues, the Loftware Label Manager includes an **Image Size Rule** property. The primary purpose of this rule is to control the characteristics of variable images (images which are not specified until print time).

Image Size Rule - When you select Image Size Rule in the Properties box and select the options button in the text box, Loftware Label Manager displays three options:

- **Allow Resizing** - This option automatically resizes a new image to fit the image box, as described above. The dimensions of the "place-holder" always remain the same, but the critical aspects of an image (e.g., the roundness of a circle) may be distorted.
- **Preserve Image Size** - This option ignores the size of the filler image and prints the image to its original file size, keying off the upper left-hand corner of the image box. At print time, a large image could spill over outside the image area and obscure other fields.

- **Preserve Aspect Ratio (default)** - This option gives you the "best available" rendering of an image while keeping it within the original image box, although the image may not necessarily fill out the available space in the image box. When you choose this option, a circle always remains a circle (its circular shape is never distorted). The image keys off the upper left-hand corner of the image box.

Dither Method - Loftware Label Manager automatically matches the color depth of any images you print to the target printer; that is, you can send color images to a thermal transfer printer. For most applications, the automatic conversion performed by Loftware Label Manager provides the best results and there is no need to dither the image (the default Dither Method is "none").

However, there are two cases where you may want to specify a dither method:

1. If you are using an image with more than 256 colors. Try different dithering algorithms to obtain the best results.

2. If your image is shown as a black box or is not shown. Some images may disappear when their color depth is adjusted. Dithering may allow these images to be used with Loftware Label Manager.

Lines and Boxes

Loftware Label Manager makes it easy for you to enhance the appearance of your labels with lines and boxes. For example, you can:

- Separate two fields with a bold line.
- Create a frame around an image.
- Place a border around a label.
- Use the Properties box to change the characteristics of a line or box.

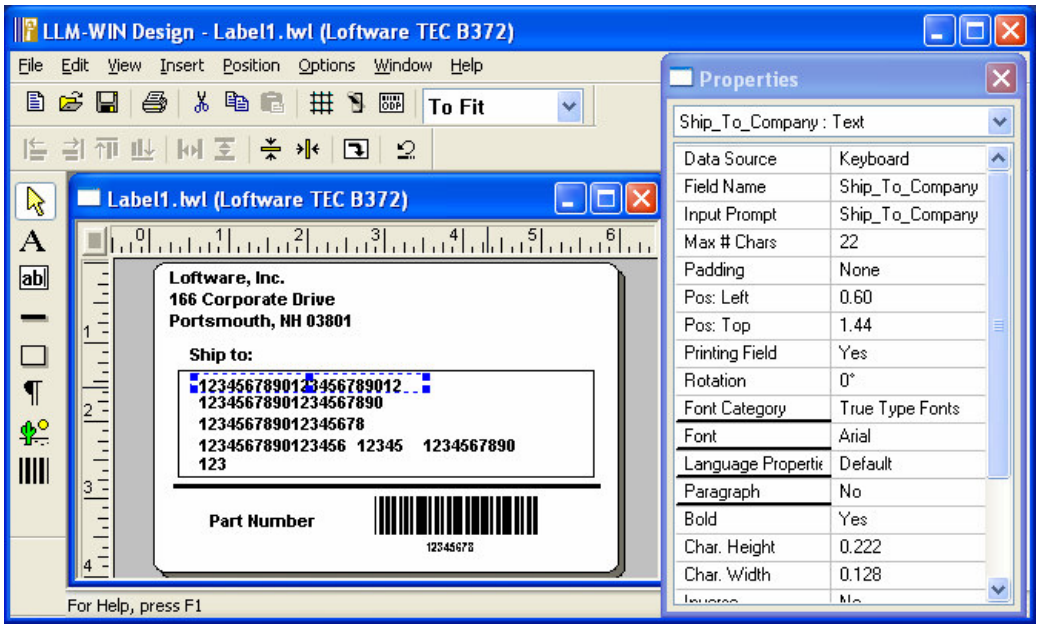

Figure 4-C: Label with lines, boxes and a border placed around the edge

Creating a Line or a Box

Choose either the Line Tool or the Box Tool from the Loftware Label Manager Toolbox.

1. Choose a starting point on the label and depress the left mouse button.
2. Drag to create the desired size of the line or box.
3. Release the left mouse button to snap the line or box into place.
4. Select appropriate properties in the Properties box to change length, thickness, width, position, or rotation, etc.

Other Editing Methods

Loftware Label Manager provides several convenient methods for editing label fields. In addition to changing values using the Properties box, you can use:

The Menu Bar - The Edit, View, Insert, Position and Options functions all allow you to manipulate fields in various ways.

The Positioning Toolbar - The Positioning Toolbar helps you align multiple fields simultaneously. Hold your mouse cursor over the icon to view its function. A description of the function is also displayed in the status bar.

Toolbar buttons and their function are described in the Design Mode - Menu Bar, Toolbars, and the Toolbox section of Chapter 3.

Moving Fields

1. **Keyboard arrow method -** Select a field using your mouse cursor and move it by using the arrow keys on the keyboard. To move multiple fields, hold the **Ctrl** button down, click on the additional fields, and move them by using the **arrow keys**.

2. **Point-and-click method -** Use the mouse to resize and move fields by using a **click** and **drag** method. You can use this method to copy or delete fields as well.

Regardless of the editing method you choose, changes in field properties are always reflected in the Properties box. In other words, the Properties box automatically gives you "up-to-the-minute" information about the characteristics of every field regardless of the editing technique.

Using the Lock Tool Menu Command

Use the Lock Tool menu command to make it easier to drop two or more identical fields into a label in succession (e.g., if you needed to drop eight bar codes into the same label).

To activate the Lock Tool:

1. Select the **Options | Lock Tool** menu command.

2. Select the appropriate tool from the Loftware Label Manager Toolbox (e.g., bar code).

3. Point and click in the label design area to create the first field, notice that the selected tool (e.g., bar code) remains locked down.

4. Continue to point and click until all of the fields are added.

5. Select the **Options | Lock Tool** menu command to unlock the Toolbox.

Changing Fields

Loftware Label Manager provides several convenient methods for manipulating fields on your labels that allow you to:

- Change the size of a field
- Move a field from one position on a label to another position on the label
- Select and edit multiple fields simultaneously
- Edit any property value (e.g., font, symbology, height, width, position, etc.)

In most cases, it is more efficient to use the editing capabilities of the Properties box (explained in an earlier chapter) to manipulate your fields. Options in the Properties box allow you to make very precise edits as well as see the property choices available for a selected field.

As you become comfortable with Loftware Label Manager, you may discover a few convenient "shortcuts" using other editing methods, all of which adhere to basic Windows conventions. These methods include:

- Using Menu Commands
- Using the Loftware Label Manager Toolbar Tools
- Using the Positioning Toolbar Tools
- Using the mouse to move, copy and resize fields

A "Lights the Way" Tip

Erasing Mistakes Using the *Undo* Command

- If you make a mistake when designing or editing a label, you can use the Edit / Undo command or the Ctrl + Z shortcut key to reverse the last action.
- Loftware Label Manager has a multiple level Undo, which allows you to undo several previous actions, depending on the type of editing you are doing.

Deleting a Field

Loftware Label Manager provides four quick methods for deleting a field from a label:

- Select the field you wish to delete; click the **Cut** icon in the Loftware Label Manager Toolbar.

Or...

- Select the field you wish to delete; click the right mouse button, and then choose **Cut** from the Edit menu.

Or...

- Select the field you wish to delete; press the Delete key on the keyboard.

Or...

- Select the field you wish to delete; choose **Delete** from the Edit menu on the menu bar.

Field List Creation

The Field List Selection feature in Loftware Label Manager provides the user with the ability to "constrain" the field names on a label to a pre-defined list. This is very helpful in LPS systems where only certain data is passed to the label. Field lists are also used for auditing what has been printed in your label. The field names and data in the LPS pass file must match those in the label. To create a constrained list, (saved with an .lst extension) complete the following steps:

1. Open **Notepad** or a similar text editor (Start > Programs > Accessories > Notepad).

2. Type in the fields that you would like the label constrained to, such as:

```
Name
Address1
Address2
City
State
Zip
Part_Number
Part_Description
Part_Color
Part_Weight
```

3. Press **File | Save As** on the Menu Bar.

4. Scroll to the Loftware Labeling Directory
(default: "C:/Program Files/Loftware Labeling")

5. Type in the name of the file with an **.lst** extension
(example: **a_field2.lst**)

6. Choose "All Files" in the **Save as Type** section.

7. Press **Save**.

If there is more than one file, the LLM senses that a file with an .LST extension exists and requests that a field name file is chosen from the list. If there is only one file, then it is chosen by default.

When you click on the **New Label Icon** in LLM Design Mode, the following is displayed if there is more than one field list available. If there is only one field list, new labels will automatically default to using it.

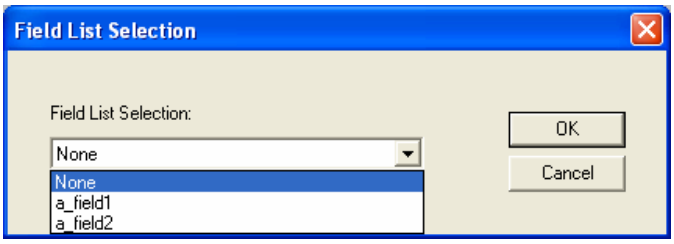

Figure 4-D: Field List Selection

Printing and Embedding Characters

Printing High ASCII characters using TrueType Fonts

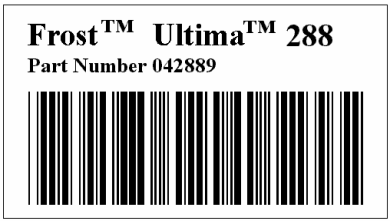

Figure 4-E: Label with trademark symbol, a high ASCII character

The trademark symbol (™) is used in many applications. This symbol is generally not included in extended character sets resident on thermal printers. It can be added to your label by using a Windows TrueType Font (sent as a bitmap to the printer).

Embedding a Symbol onto your Label Format

1. Insert a text field on your label. (The text field could be a fixed field or variable, depending on whether the information is entered at print time or always stays the same.)

2. Choose TrueType Fonts as the Font Category from the Properties box. Then determine which TrueType Font you want to use on your label and indicate this as the font name.

3. Use Character Map (located in your Windows Accessories program group) to determine the sequence of characters to use to represent the trademark symbol. If you are using Times New Roman, the sequence is **Alt-0153**. (Note: These **must** be typed from a numeric keypad).

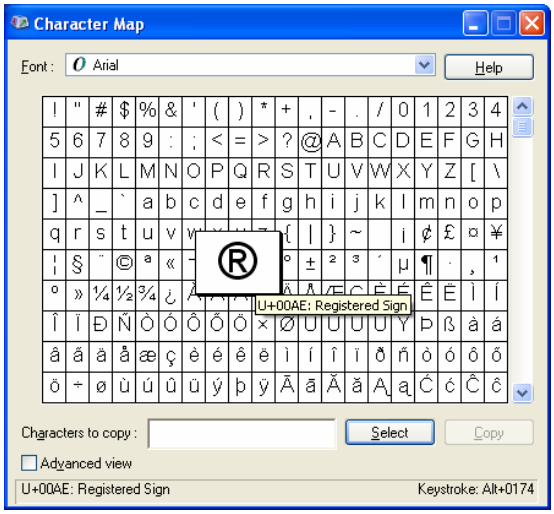

Figure 4-F: Character Map window

Printing High ASCII characters using Internal Printer Fonts

Note: *If your printer is connected to a serial (COM) port, it must be set to 8 data bits in order to access the extended character sets.*

Many applications require the registered trademark (®) symbol to be displayed on a label. You can add the symbol by creating a graphical image in Windows Paintbrush or other graphic software. With some thermal printers, this symbol is part of an extended character set.

Embedding this Symbol onto your Label Format

1. Insert a text field on your label. (The text field could be a fixed field or variable, depending on whether the information is entered at print time or always stays the same.)

2. Choose an internal font that includes the registered trademark symbol. (Look at your printer manual under extended character sets.)

3. Enter the character sequence for this character when printing the label (based on the character map for the internal font). For example, the ALT sequence to print the ® character using a Monarch printer is **Alt-0174**, if you have selected the ANSI Symbol Set in Printer Setup.

Note: *If you are using a database to store your information, you may be able to use the same ALT sequence to store the desired character. Be aware that some database formats do not store or retrieve High ASCII characters reliably.*

Loftware® Label Manager – LLM®

Figure 4-G: Printing the high ASCII registered trademark character

Note: *For more information on International Character Sets, International Keyboards and configuring Loftware Label Manager parameter settings, refer to the International Printing Chapter.*

Advanced Bar Code Symbologies

The following terms may be of use to you as you go through the following section.

ANSI - American National Standards Institute, a non-governmental organization responsible for the coordination of voluntary national (United States) standards.

Application Identifier (AI) - A specified string of characters that defines the general category or intended use of the data that follows. Originally designed as numeric identifiers to take advantage of the numeric compaction feature of UCC/EAN-128. These identifiers are specified in ANSI/UCC4, *UCC·EAN Application Identifier Standard*.

Bar Code - An array of parallel rectangular bars and spaces arranged according to the encodation rules of a particular symbol specification in order to represent data in machine-readable form. For the purposes of this guideline the term “bar code” includes linear (e.g., Code 39 and Code 128), two-dimensional (e.g., Data Matrix and MicroPDF417), and composite (e.g. CC-A linked to RSS-14) machine-readable symbols.

Bar Code Character - A single group of bars and spaces that represent an individual letter, number, punctuation mark or other symbol.

Bar Code Density - The number of data characters that can be represented in a linear unit of measure. Bar code density is a function of the "X" dimension, element width ration, and intercharacter gap.

Bar Code Reader or Scanner - A device used for machine reading of a bar code. Readers may employ hand held wands, fixed optical beams, moving laser beams, or hand-held moving laser beam (see "Scanner").

Bar Code Symbol - An array of rectangular bars and spaces that are arranged in a predetermined pattern following specific rules to represent elements of data that are referred to as characters. A bar code symbol contains a leading quiet zone, start pattern data character(s) including a check character (if any), stop pattern, and a trailing quiet zone.

Bar Height - The bar dimension perpendicular to the bar width. Also called bar length.

Bar Width - The perpendicular distance across a bar measured from a point on one edge to a point on the opposite edge. Each point will be defined as having a reflectance that is 50 percent of the difference between the background and bar reflectance.

Character:

Data Character - A letter, digit, or other member of the ASCII character set.

Symbol Character - A unique bar and/or space pattern, or a dark and light cell pattern, which is defined for a specific symbology. There is not necessarily a one-to-one unique correlation between symbol characters and data characters. Depending on the symbology, symbol characters may have a unique associated symbol value.

Character Set - Those characters available for encodation in a particular automatic identification technology.

Check Character - A digit or character calculated from the data and appended as part of the data string to insure that the data is correctly composed and transmitted.

Code 39 - The 3 of 9 bar code is a variable length, discrete, self-checking, bidirectional, alphanumeric bar code. Its character set contains 43 meaningful characters: 0-9, A-Z, -, ., $, /, %, *, and space. Each character is composed of nine elements: five bars and four spaces. Three of the nine elements are wide (binary value 1), and six elements are narrow (binary value 0). The character (*) is used for both start and stop character.

CLEI™ Code - A 10-character coding structure maintained by Telcordia Technologies that identifies communications equipment, in a concise, uniform feature-oriented language, describing product type, features, source document and associated drawings and vintages.

Data Field - The specific portion or area of a label designated to contain human readable, bar code or graphic information.

Data element separator - A specified character used to delimit discrete fields of data.

Data Identifier (DI) - A specified character string which defines the specific intended use of the data that immediately follows. The identifier shall be an alphabetic character or an alphabetic character preceded by up to three numeric characters as defined by ANSI.

Global Trade Item Number (GTIN) - The Global Trade Item Number is used in EAN·UCC System for the unique identification of trade items. A trade item is any item (product or service) upon which there is a need to retrieve pre-defined information that may be priced, ordered or invoiced at any point in any supply chain. This includes individual items as well as their different types of packages. The GTIN is defined as a 14-digit number to accommodate the different structures. There are four (4) numbering structures which provide unique numbers when right justified in a 14-digit field. These are: EAN/UCC-14, EAN/UCC-13, UCC-12 and EAN/UCC-8. See the *General EAN·UCC Specifications* (available from the Uniform Code Council) for additional information.

Human-readable Interpretation - The letters, digits or other characters associated with specific symbol characters and printed along with the linear bar code, two-dimensional symbol, or RFID Tag.

Module - In a linear or multi-row bar code symbology, the nominal unit of width in a symbol character. In certain symbologies, element widths may be specified as multiples of one module. This is equivalent to X dimension.

Overhead characters - Those characters included within a symbol that are not data characters, e.g., start, stop, error checking, concatenation, and field identifier characters.

Quiet Zone - Areas of high reflectance (spaces) surrounding the machine-readable symbol. Quiet zone requirements may be found in application and symbology specifications. Sometimes called the "Clear Area" or “Margin.”

Standard Product Identification - The numbering scheme used to uniquely identify a product for reference among all participants of the supply chain. More simply put, it is the one number that is used by all members in the supply chain to reference that particular product.

Structure - The order of data elements in a message.

Symbol - A machine readable pattern typically comprised of quiet zones, start/stop or finder pattern(s) and symbol characters (which include special function and error detection and/or correction characters) required by a particular symbology.

Syntax - The way in which data is put together to form messages. Syntax also includes rules governing the use of appropriate identifiers, delimiters, separator character(s), and other non-data characters within the message. Syntax with Bar Codes and RFID Tags is the equivalent to grammar in spoken language.

Unique Serial Identification - A series of alphanumeric characters which consists of two segments, the manufacturer identification segment and the serial number segment. The combination of these two segments ensures uniqueness within a company. See the TCIF document TCIF-98-005, *Product Serialization Guideline*, for additional information.

Universal Product Code (U.P.C.) - The Universal Product Code is 12 characters in length and contains: (1) a number unique to the manufacturer assigned by the Uniform Code Council (UCC), (2) the product number assigned by the manufacturer (or owner of the label) and (3) a check character.

X Dimension - The specified width of the narrow element (bar or space) in a bar code symbol.

Printing Advanced Bar Code Symbologies

The complexity of bar code symbologies has increased over the past several years as shipping requirements have changed. Printing these new bar code symbologies may prove to be somewhat of a difficult proposition, given that not all printer models contain firmware to support the printing of them. If the appropriate firmware is resident in the printer, Loftware sends the bar code down to the printer and it prints natively. However, recognizing that not all of our supported printers have this firmware, Loftware has created the ability to add some of the newer advanced bar codes to the label as bitmaps. This means that these advanced bar code symbologies are able to be printed despite not having this support at the printer level.

At this time, Loftware supports sending advanced bar code symbologies as **bitmaps** to all of our Printer Families. The capability of sending advanced bar code symbologies **natively** is supported in *some* of our Printer Families.

Some of the advanced bar code symbologies that are supported by Loftware are:

PDF 417
MicroPDF
Maxicode
Datamatrix
PostNet
TLC39
RSS Symbologies

There are advantages and disadvantages of sending these bar codes down as bitmaps to the printer.

Disadvantages – Printing slower, as with all bitmaps sent down to a printer.

Advantages – This advanced bar code symbology is able to be printed to any printer despite the lack of printer support.

Building MaxiCode Symbols

As companies across the world strive to improve productivity, efficient management of goods and materials is becoming increasingly important to the manufacturing and distribution sectors. That is why MaxiCode was developed. MaxiCode provides a way to store a lot of information in a small space.

MaxiCode is a two-dimensional symbology that can encode about 100 characters of data in an area of one square inch. Within this small space are two MaxiCode components; black and white hexagons that pack information in two directions, and a target-like central pattern that allows the symbol to be easily located at high speeds. A MaxiCode symbol is displayed in the template below.

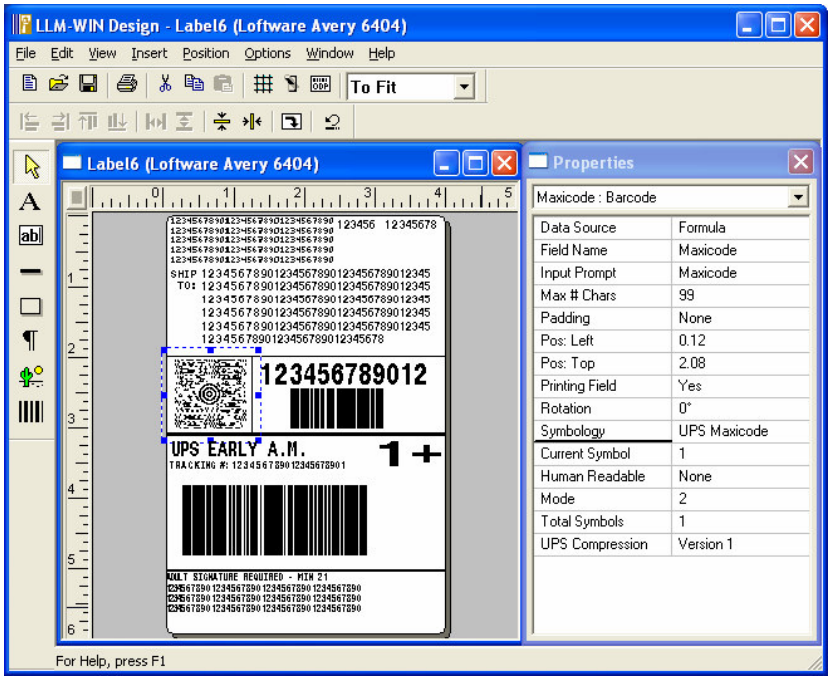

Figure 4-H: UPS MaxiCode Template

MaxiCode has been recommended by the American National Standards Institute (ANSI) as the two-dimensional symbol most appropriate for the sortation and tracking of unit loads and transport packages. MaxiCode has high information density and can be read at high speeds in a large field of view. MaxiCode can be decoded in any orientation, and offers the security of high data integrity even if the symbol is damaged. Because of their small size, MaxiCodes are easily incorporated into label designs. In fact, many printer manufacturers already have the capability to print MaxiCodes on labels. MaxiCode is the best symbology to use any time a large field of view is required, a label is moving, the label orientation is random, or if label space is limited.

MaxiCode is supported in all our printer families, including Windows printers. The templates are included in our product as well as on our CD, and also available for download from our website.

Note: *A sample label named " MaxicodeCompressionTest.lwl has been added to the ..\labels\samples\maxicode directory in Loftware. The label has 2 maxicode symbols, each with compression properties turned on and a clear value set. One of the symbols is not compressed; the other is compressed. It may be used as a troubleshooting tool to see if compression is working.*

To open a UPS MaxiCode template:

1. Open Loftware Label Manager in Design Mode
2. Choose **File > New** from the Menu Bar
3. Choose "**Compliance Template Label**" in the New Label Wizard.

4. Choose the Target Printer Family and Model.
5. Choose the UPS Template you wish to use from the list.

   The Template you choose contains the MaxiCode Symbol.
6. Press **Next** and **Finish**

For more information on Templates, see the "Templates and Wizards" chapter.

MaxiCode Compression

Loftware added the UPS Compression Property in Loftware Version 6.0. Compression is a means to allow more data to be included in the MaxiCode symbol. UPS developed the compression tool that is used by Loftware, and UPS is recommending its implementation as soon as possible. The following fields are present in a *non-compressed* UPS MaxiCode symbol:

Ship To Postal Code	Shipment ID
Ship To ISO Country Code	Shipment N of X
Class of Service	Weight
Tracking Number	Address Validation
Origin Carrier SCAC	Ship To Address
Shipper ID	Ship To City
Julian Date of Pickup	Ship To State

A compressed UPS Maxicode symbol also contains the following fields:

Ship To Address Line 2
Ship To Address Line 3
Ship To Address Line 4
Ship To Address Line 5

On-Demand Printing

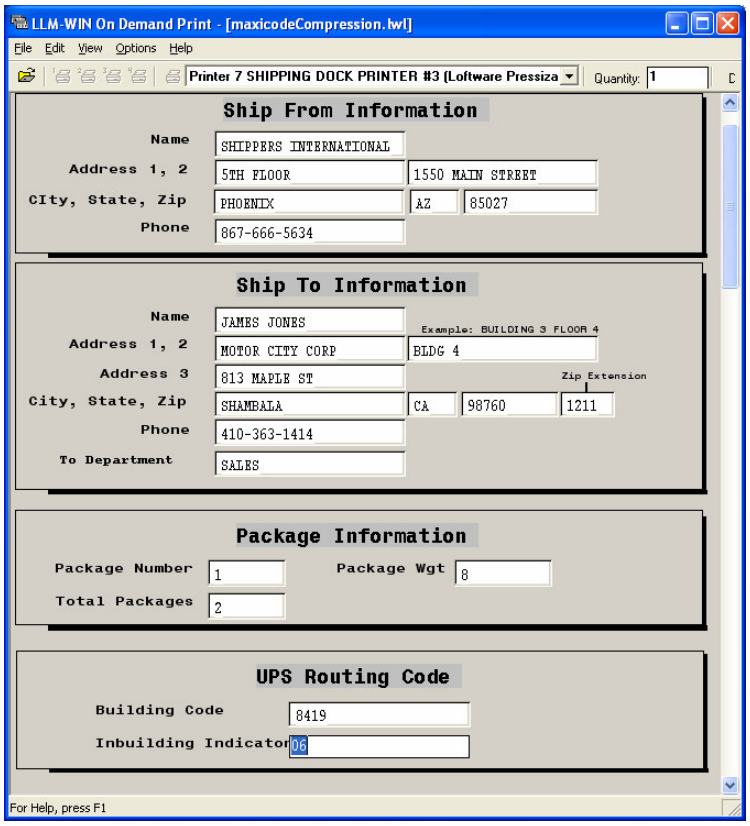

Figure 4-I: MaxiCode Template On-Demand Print Screen

Using MaxiCode Compression

Loftware has included templates for each label in the "Label Examples by Service" section of the **UPS GUIDE TO LABELING** document, February 2001 Edition. (Contact UPS for this document.) The MaxiCode formulas on each of these templates are constructed to conform to the UPS Compression Tool requirements. The easiest way to implement Maxicode compression is to use the template that matches your specific labeling requirement. Information on how Loftware implements the UPS Compression Tool follows.

UPS Compression is found in the MaxiCode Properties box.

Note that the options in the drop-down list are either "None" or "Version 1." If "None" is selected, then no compression takes place. This is the default setting. If the MaxiCode Template is used, the default is "Version1". If the "Version 1" option is selected, then Loftware runs the compression tool if possible. Loftware calls the UPS Compression Tool "Version 1", as this tool may be revised by UPS at a future date. There are several factors that come into play with using compression, and they are outlined below.

MaxiCode Data Format

Another advantage of using the Version 1 setting is that the same data structure is utilized for all printers, therefore the same formula works for all the different printer families that Loftware supports. Use one formula and Loftware's code behind the scenes takes care of the rest! Loftware's UPS templates are designed using a formula datasource for the MaxiCode symbol. The formula is constructed so that you can supply your data as separate, individual fields, using any of the Loftware label printing methods (ODP, Batch, ActiveX, etc.). The formula then formats the data into the correct ANSI compliant string (ACS) per UPS specifications. (More on the ANSI compliant string follows.) Alternatively, if you are using the LPS, you can change the data source to "Keyboard" and supply the entire ACS via a PAS, CSV, etc. It is NOT possible to print a MaxiCode Mode 2 or Mode 3 symbol correctly in On-Demand Print using the Keyboard Data Source, as the non-printable ASCII characters such as GS, RS and EOT are not able to be added in the input screen.

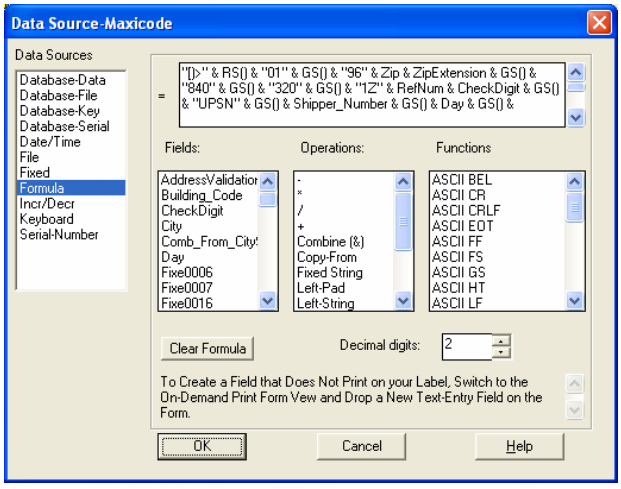

Figure 4-J: MaxiCode Formula

MaxiCode .PAS File Format

```
From_Name,SHIPPERS INTERNATIONAL
From_Address1,5TH FLOOR
From_Address2,1550 W AWHERE STREET
From_City,PHOENIX
From_State,AZ
From_Zip,85027-1550
From_PhoneNo,(321)456-7890
To_Name,JOSEPH COHEN
To_Company,MOTOR CITY CORP
To_Address2,ROOM 202
To_Address1,813 KREMENETSKI ST
Department,ENGINEERING DEPT
City,SHAMBALA
State,CA
Zip,98760
ZipExtension,1211
To_Phone,(987) 654-3210
```

```
PkgNum,1
Total_Packages,3
Weight,140
Building_Code,8419
Inbuilding_Indicator,06
ServiceTitle,UPS GROUND
ServiceIcon,GND
Shipper_Number,123456
Class,001
RefNum,1234567
CheckDigit,5
Shipment_ID,8897
Day,123
Country,840
SCAC,UPSN
Addlinfo1,ANSI COMPLIANT STRING
AddlInfo2,BUILT BY FORMULA
```

***PRINTLABELModes -** Modes are set in the Properties box. The compression option should only be used for Mode 2 (domestic shipping) and Mode 3 (international shipping). If you have chosen Mode 3 in the Properties box, the data is not compressed; however, it is formatted for the specific printer family . With Mode 2, the data is both compressed and formatted, and then sent to the printer.

The following conditions apply when Maxicode Compression is set to Version 1.

The Symbol prints with compressed data if:

- Data is supplied in the correct ANSI Compliant String (ACS) format **AND**
- It is a Mode 2 symbol.

The Symbol prints with uncompressed data if:

- It is a Mode 3 Symbol **OR**
- It is a Mode 2 Symbol and the UPS Compression Tool fails to compress the data.

The Symbol prints with incorrect data if:

- The Symbol is not Mode 2 or 3, and the data supplied is not in the correct format for the printer **OR**
- The first 9 characters of the data do not match the header ([]>R**s01Gs96**) in the formula and the data supplied is not in the correct format for the printer.

The Symbol does not print if:

- Any of the “non-truncateable” fields have too much data (see following information) **OR**
- The Symbol is Mode 2 and the data could not be compressed and; either the Postal Code has non-numeric characters, or is not a valid length (5 or 9 characters) **OR**
- The data is not compressed (either because the UPS Compression Tool fails to compress the data, or it is not a Mode 2 Symbol) and the data length is greater than the allowable character amount. (99 for Mode 2, 96 for Mode 3).

Note: *In general, the UPS Compression Tool fails to compress the supplied data if one of the fields contains invalid data. For instance, an alpha character in the Postal Code field (Mode 2) or 3 characters in the State field.*

ANSI-Compliant String

The following table shows the fields for the MaxiCode symbol and the maximum allowable size for each field.

Note: *Fields marked with an* ******* *are NOT allowed to be truncated.*

KEY: N=Numeric only (***ex:*** *9N means 9 numeric characters)*
AN=Alphanumeric *(**ex:** 6AN means 6 alpha-numeric characters)*

Field Name	Max Size (Bytes) & Type	Comment
Ship To *Postal Code* *	Mode 2, 9N Mode 3, 6AN	This field should be populated as left justified.
Ship To ISO *Country Code* *	3N	
Class of Service *	3N	
Tracking Number *	10AN	
Origin Carrier *SCAC* * UPSN	4	
Shipper ID *	6AN	
Julian Date of Pickup *	N3	Indicates the date the package was labeled. This field contains the numerical day of the year (0-999).
Shipment ID *	AN0…30	Contains a number that identifies a shipment. This field is optional.
Shipment N of X *	N0..3/N0..3	Contains package “n” of “x” total packages in a shipment.
Weight *	N0…10	Contains the gravitational weight of the package (lb.)
*Address Validation (Y/N)**	1	Set to Y if Content of Postal Code, City, and State have been validated using CASS*-certified software).
Ship To Address	AN0..35	Ship To Address, Line 1, Suggested: Primary Address. This is typically the Street Address.
Ship To City *	AN0…35	
Ship To State *	A2	
Ship To Address Line 2 Application Identifier (20L)	AN3+AN0…35	Suggested: Secondary Address (1). This is typically the Room/Floor or Urbanization.
Ship To Address Line 3 Application Identifier (21L)	AN3+AN0…35	Suggested: Secondary Address (2). This is typically the Department.
Ship To Address Line 4 Application Identifier (22L)	AN3+AN0…35	Suggested: Consignee (1), typically the Company Name. (This is typically the portion of an address that is tied to an address book mechanism)
Ship To Address Line 5 Application Identifier (23L)	AN3+AN0…35	Suggested: Consignee (2), typically the Attn: field content.

*CASS - Coding Accuracy Support System certification by the United States Postal Service

Building UCC-128 Bar Codes

Most thermal printers today include a UCC-128 SSCC (Serial Shipping Container Code) symbology option. This bar code symbology is available in all Loftware Label Manager printer drivers. As a minimum, this code is a Code-128 bar code that includes a FNC1 character, an application identifier, user data, and two check digits (a Modulus 103 and a Modulus 10 check character).

Figure 4-K: UCC Bar Code

To build other UCC bar codes, such as the SCC-14, Loftware Label Manager provides Code-128 attributes available in the Properties box in Loftware Design Mode. These attributes provide the tools to quickly build a UCC-bar code for any printer in Loftware Label Manager that includes both the bar code data and human readable interpretation with one set of entered data. However, **Loftware recommends that you use the UCC Bar Code Wizard to create all Bar Codes**. See the Templates and Wizards chapter for information on the new Bar Code Wizard.

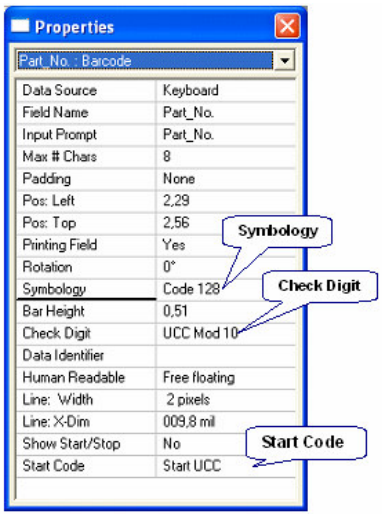

Figure 4-L: Properties Box

Symbology

1. Select Code 128.

Check Digit

2. Select **UCC Mod 10** to add a modulus 10 to the end of the bar code. This option strips out parentheses and spaces in your data before calculating the Check Digit. For example, if the user enters from the On-Demand Print form (00) 0 0012345 5555555555, "00012345555555555" is used as the data to calculate the Check Digit. Notice the (AI) Application Identifier (00) is excluded from the data when calculating the Mod 10 Check Digit.

Note: *Like all code 128 bar code symbologies, the Mod 103 Check Digit is automatically added to the end of the bar code field.*

Start Code

3. Select **Start UCC**. This option prefixes the Code 128 bar code with a Start Code C option and a FNC1 character.

Building TLC39 Bar Codes

TLC39 is a "composite" symbology designed for the Telecommunications Industry. TLC39 combines a Code 39 symbol, encoding a part number (for items such as plug-in boards at central switching stations) with a "linked" MicroPDF417 symbol encoding a serial number and other optional information.

The first 6 characters must be numeric and include the ECI number. The 7th character is a delimiter between the linear data portion and the composite data portion, typically a comma, but other delimiters are allowed. The next piece of data is a mandatory unique Serial Number.

There can be other data fields after the Serial Number, usually either AppIDs or DataIDs, which are governed by whether or not there are alpha characters in the serial number. Country Of Origin is another typical data field that is included in this symbology.

Loftware supports the native printing of this symbology to both Zebra and Datamax; however, this ability is firmware dependent. Contact Zebra or Datamax to find out more information. Loftware is able to print this symbology as a bitmap to all of our supported printers.

Audit Files

All Loftware modules have the ability to capture label information that is requested and printed. Audit Files are set up in Design Mode and, in Version 6.1+, have much more capability. The information gathered is very useful for tracking label production information.

Enabling Audit Files

Select **Options | Audit Setup** from LLM Design Mode. If this is the first time you are using Auditing, the **Auditing Setup** dialog box is displayed with *Disable Auditing* (the default) selected. If you have Auditing enabled in a previous version of Loftware, **Legacy Auditing** is the default.

The Audit Mode Section

There are three choices in this section.

Global Auditing – This setting allows you to set up your audit files in a more specific way than has been possible before. There are several sub-options available, and they are discussed in the following section.

Legacy Auditing – This is the setting that Loftware users are familiar with. If you are already using Auditing in a version prior to 6.1, then all your settings for Audit Files have been carried over automatically, and this option displays as selected. Further information on Legacy Auditing is found in a following section.

Disable Auditing – This setting disables all auditing functions.

The remaining sections of this dialog box are used with Loftware's new Global Auditing function.

Global Auditing

Global Auditing is field-based, and unlike Legacy Auditing, which audits all fields for all labels, only selected fields are audited, making parsing the data much easier. Global Auditing is a customizable label reporting function which is used to generate a database of selected label printing information. Global Auditing allows the user to audit all or some of the fields of printed labels, both fixed and variable. The report can be uploaded to a host system, or imported into a database or spreadsheet program.

Global Auditing Setup

If you have selected **Global Auditing** in the Audit Mode Section, then the other sections of this dialog box must be configured as well.

Enter Field Name Section – This section allows you to enter Field Names that are to be added to the Audit File "Audited List". The field names are the names you gave the variable or fixed text fields on your label. Type in the field name(s) in the text box, and click **Add**, or press **Enter**. The field name is added to the Audited List.

Available List Section – This section contains a list of the system fields. System fields are those fields that are not usually part of the printed fields common to most labels but are part of the system's tracking.

System Information	Description
Date	The date the label request is received.
Time	The time the request is received. Actual time of printing may be delayed if the system is busy.
Label filename	The name of the label file, i.e.; "gm.lwl"
Computer Name	The network name of the computer, not the operator name
Job Name	The name of the job, only applicable for LPS users.
Printer Name	The Printer Alias if created in printer configuration
Printing Application	The application that printed label: On-Demand, Design, etc.
Key String	The license string of the Loftware Software.
Duplicates	Number of duplicate labels produced with the same serial #.
Quantity	The quantity printed.

Field Information – LST Files

.LST files - If you create **.lst files** to constrain the available fields in Design Mode, the content of these files are listed in alphabetical order in the *Available List* in Audit Setup. Multiple .lst fields that have identical field names are listed only once. The .lst file is very helpful in terms of auditing, as it prevents a misspelled field name from being added in the *Enter Field Name* box, and it speeds up the creation of auditing in general. Taking a little time up front to create these lists is a time-saver in the long run. More information on .lst files and information on constraining label design mode are found earlier in this chapter.

To move System fields or .lst fields from the *Available List* to the *Audited List*, highlight one or more items on the left column, and click the right arrow  button, or double-click the field(s). See the following example:

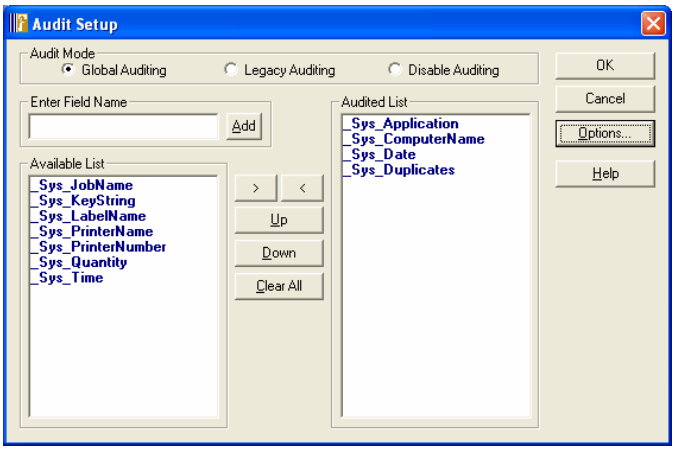

Figure 4-M: Global Auditing with selections added to the Audited List.

Audited List Section – This list represents the actual fields which are to be audited in chronological order. You have four movement options available for fields displayed in this list.

Highlight the field and	Loftware:
Press on the **left** arrow < button	Moves the System field(s) back to the Available List. (Only System fields are moved, not fields that you have added via the *Enter Field Name* section. Any selected "user-added" fields are deleted).
Press on the **Up** button	Moves the selected field(s) up one line, allowing control of the order of fields in the Audit File.
Press on the **Down** button	Moves the selected field(s) down one line.
Press on the **Clear All** button	Clears All the fields from the available list. The System Fields are moved back in to the *Available List*, and the User-added fields are deleted.

Global Auditing Options

To display additional Global Auditing options, press the Options button in the setup dialog box. The **Global Audit Options** dialog box is displayed.

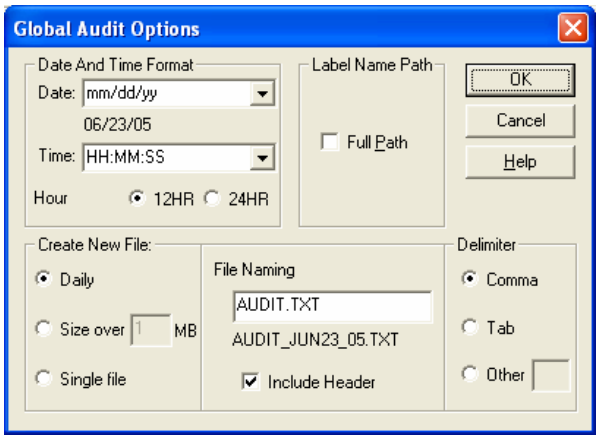

Figure 4-N: Global Audit Options

Global Audit Options

Date and Time Format Section

This section allows you to choose the format that you want the Date and Time fields displayed in the Audit files. The drop-down lists provide different format configurations, but you may type in configurations that are not displayed in the drop-down list as well.

Key code…	Means ...
d	numeric day (displayed as a single digit; e.g. 2)
dd	numeric day (displayed as a double digit; e.g. 26, or 02)
ddd	alpha day (abbreviated; e.g. Tues)
dddd	alpha day (full; e.g. Tuesday)
h	hour (displayed as a single digit; e.g. 2)
hh	hour (displayed as a double digit; e.g. 02, or 14)
mm	minute (or month, displayed as a double digit; e.g. 45 or 06.)
mmm	month (alpha-abbreviated; e.g. Mar)
mmmm	month (full alpha spelling; e.g. March)
ss	second (displayed as double digit, e.g.32, or 08)
yy	year (displayed as double digit, e.g. 03)
yyyy	year (full display, e.g. 2003)
WW	week no. (e.g., Jan 1 through 7 = Week 01)
JJJ	day no. (Julian calendar, e.g., Jan 1 = Day 001)

Here are a few examples of the versatility of the Date/Time option:

Custom Format	The date and/or time is printed as...
mm/dd/yy	Program default = 11/13/03
d-mmm	13-Nov
d-mmmm-yyyy	13-November-2003
ddmmyy	131103
h:mm:ss	4:15:55
hh:mm:ss	Program default = 04:15:55
m*d*yy	11*13*03

Hour Format – Either **12HR** or **24HR** (e.g.; Military Time) are available.
24HR displays 2:00 p.m. as 1400 hrs.

Label Name Path Section

The default is the **Full Path** checkbox unchecked. If you would like the full path to the label displayed in your Audit File, click in the *Full Path* checkbox. The full path to the label may look something like: **C:\Program Files\Loftware Labeling\LABELS\Label1.lwl**, whereas if this option is unchecked, the path would be: **Label1.lwl**.

Create New File Section

The three options listed in this section are designed to give you control over the way in which new Audit files are created.

Daily – If this option is chosen, a new Audit File is created every day. This is the default option, and may be a viable choice for those who are trying to monitor what products, companies or labels are being generated on a daily basis.

Size over – This option allows continuation of the file until a user-defined size has been reached. Perhaps 1MB is approximately 1 week's worth of labels, and you want to keep a weekly count *(more or less)* of labels, then this choice may work well for you.

Single File – This option creates a single Audit File which is added to every time a label is created.

***Note**: These options must be used with caution, as the user is responsible for ensuring that the Audit File does not grow so large as to take up a huge amount of disk space! If you are using the LPS, see the **Housekeeping Section** of the LPS Chapter in the LPS User's Guide for information on managing the size of audit files.*

File Naming Convention Section

Type in the first part of the file name in the Text Box. The file name displayed below the text box is dependent upon when you have chosen to have a new file created. Example: If you have selected Daily in the Create New File Section, and typed in the naming convention 'Shipping.CSV', the resulting file name is 'Shipping_13NOV03.CSV'. If you chose the Size over option , the resulting file name is 'Shipping_001.CSV' . If the Include Header checkbox is checked, then a header containing the names of the audited fields is written at the top of the audit file. Including a header in your CSV files is most helpful when reviewing your audit files, especially if you are importing your files into a spreadsheet program such as Microsoft Excel©.

Delimiter Section

The are three options in this section. The choice made determines how the data in the Audit File is separated. *Comma* delimited is the default, and is the most commonly used delimiter, however, you may choose *Tab*, or create a delimiter by choosing *Other*, and typing in the desired symbol. An example of an audit file with a header and comma delimitation is displayed below.

Date,_Sys_LabelName,_Sys_ComputerName,Part_Number, Color, Description,Kanban,Qty_Shipped,Ship_Weight,FDTNo

11/13/03,Ford.lwl,Mark2000,F4000,Black,LDoorhandles,,250,75,FDT2x
11/13/03,Toyota.lwl,Mark2000,T355,Black,LDoorhandles,,250,80,
11/13/03,GM.lwl,Mark2000,G80,Silver,LDoorhandles,H28456739,250,75,
11/13/03,Ford.lwl,DonXP,F6000,Black,RDoorhandles,,250,75,FTD4x
11/13/03,Toyota.lwl,DonXP,T8000,Blue,RDoorhandles,,250,80,
11/13/03,GM.lwl,DonXP,G70,Silver,RDoorhandles,H28456740,250,75,

The example above displays printed automotive labels. The header of the audit file displays the name of the fields that have been added to the *Audited List*. The list below the header displays the data within each of the named fields. In this case, each of the labels have some similar fields, but not all the fields are found on each label. If a field designated for auditing is not a part of a label, a comma is added as a 'placeholder'. The audit file can easily be transferred into an Excel spreadsheet, and in a future version of Loftware, the file may be written to an ODBC datasource as well.

Be sure to review the CSV rules found in the Loftware Print Server chapter of the LPS User's Guide.

Additional Global Auditing Information

Labels with Layouts - Loftware Auditing now produces a separate audit record for each layout label instead of one long record of the layout labels.

Images - Use image file name instead of image data itself, i.e., **csa300.pcx**

Non-Printing Fields – You do have the ability to include Non-Printing fields in your Audit File. Adding an operator name, for example, would help in keeping track of that individual's daily part production.

Fixed Fields – Fixed fields may also be added to the audit file list. Perhaps a fixed division number is printed on a particular label, and adding this field would keep a per-division count of labels and the included pertinent data.

Security - Under *Options* > *Preferences* > *Security* in Loftware Design Mode, Administrative locking of Audit Files with the addition of a password is possible.

Legacy Auditing

Legacy Auditing is the name given to Loftware's existing auditing function to distinguish it from the Global Auditing function. If you have recently upgraded your Loftware version, but you want to utilize Loftware's auditing as you currently do, then choose **Legacy Auditing** once, and your audit files operate as they always have, including the options you previously chose.

Why would you use Legacy Auditing? Perhaps you have already set up a program to parse the data from your current auditing setup, and things are working well for you at this time. You may not want or be able to take the time to set up the .lst files the way you would like them.

Changing Legacy Auditing

If you want to change the Legacy Settings, you may choose **Legacy Auditing** in Auditing Setup and click on the **Options** button to make the changes. All printing activity is recorded and placed in a Loftware Label Manager subdirectory named **Audit**. (File locations can be changed by selecting the **Options | File Locations | Audit Files** menu.) Audit Files are generated for each print job, retained on a daily basis, and have these characteristics:

- Audit File names are in the format, mmmdd_yy.txt (The .txt extension ensures easy file import into spreadsheet and database applications.)
- Bar code fields have two Audit File entries, one for the bar code data and the second (fieldname. HR) for the human readable data.

Note two examples of Audit Files produced after printing two different records from the On-Demand Print Module. AUDIT.LWL was the label format used. Note that status conditions of all printing are reported.

Example 1: Default Audit settings in the Audit File: name is Jan22_03.TXT

Wed Jan 22 08:45:17 2003,RL00001048,App:ODP,C:\AUDIT.LWL:PRINT DATA:,Barc0000=12312312,Barc0000.HR=12312312

Example 2: (Show Print Requests and Show Print Status enabled in the **Legacy Options** dialog box **;** name is Apr22_02.TXT)

Wed Apr 22 08:52:34 2003,RL00001048,App:ODP,C:\AUDIT.LWL: REQUEST: Printer:1 Quantity:1 Duplicates:1

Wed Apr 22 08:52:36 2003,RL00001048,App:ODP,C:\AUDIT.LWL: STATUS: Native; StatusId:0 ErrorId:0 ErrorString:

Wed Apr 22 08:52:36 2003,RL00001048,App:ODP,C:\AUDIT.LWL: PRINT DATA: Barc0000=12312312,Barc0000.HR=12312312

Parameter File Settings for Audit Files

To control the amount of data output to the Audit Files, adjust the parameter file settings from the **Legacy Options** dialog box:

- Show Print Requests and Statuses in Audit Files
- Show Print Statuses in Audit Files
- Show Printed Data in Audit Files
- Show Non-Printing Data in Audit Files
- Don’t Audit Fixed Fields
- Custom Field Delimiter (such as a comma)
- Custom File Extension (such as .txt)

Chapter 5 The Loftware RFID Solution

Loftware and RFID

Leveraging years of leadership in barcode label design and printing, Loftware introduced its RFID resource in Version 8.0. Version 8.0 offered the ability to design and create EPC-compliant RFID Smart Labels, enabling implementation of mandates set forth by Wal-Mart and the Department of Defense. It provided the most-commonly used EPC encoding schemes for transparently programming RFID inlays embedded in label substrates. Loftware allowed encoded smart labels to be driven to many supported UHF RFID printers. With Version 8.0, Loftware made the leap from normal barcode labels to RFID Smart Labels a painless venture.

Loftware extended its RFID solution to utilize RFID tag block data structures and support EPC and DoD data constructs for both HF and UHF schemes. To do so, it revamped its encoding algorithms. Memory on RFID smart labels and tags is segmented into blocks. Depending on the tag type, blocks can vary in number and size. Loftware addressed these differences, providing access to each block to accommodate additional data. Data can be written for supported UHF and HF labels on a block by block basis.

Building on these advancements, Loftware has implemented its new RFID Reader Module to write data to RFID tags using Loftware-supported RFID readers.

***Note**: While RFID Tags and RFID Readers can be configured in LLM design mode using LLM's New Media Wizard, Block Configuration, and Device Configuration, it is important to note the following:*

1. *To write encoded data to a configured RFID Tag, you will need the Loftware RFID Reader Module with Loftware Premier Plus RFID.*
2. *You will need a Loftware RFID Reader to write data to the tag.*
3. *You can only perform tag writing with the Loftware RFID Reader Module. Tag reading is only supported programatically through the Loftware Reader Control. The Loftware Reader Control is an extension of the Loftware .NET Control that allows developers to implement tag reading and writing via the Reader Control API.*
4. *Creating RFID Tags is described in this chapter. RFID Readers and DSO settings, the Loftware Reader Control – methods, properties, and sample applications – are discussed in a separate document, "Loftware RFID Reader Solutions User's Guide."*
5. *Printing a Smart Label is very similar to printing a standard barcode label, once this and its target printer have been set up. This and RFID Device Setting Options are discussed in this guide.*

With businesses poised to tackle migration to Generation 2 tag types while maintaining a multi-protocol RFID environment, Loftware has extended support for UHF Class 1 Generation 2 tags (C1G2). Loftware provides access to C1G2's expanded block structure that includes a higher level of security. It has added several RFID printers that support the C1G2 protocol to its device line.

This chapter guides you through creating RFID smart labels. It discusses setting up an RFID tag. Be aware, however, that while you can set up an RFID tag in LLM, you will need to use the RFID Reader Module to write to the tag. The chapter also demonstrates block configuration using EPC or DoD construct. It includes many examples with sample data to help you through the learning curve and to get you up and running quickly.

Keep the following in mind as you expand your tracking system to include RFID:

- Loftware supports creating RFID Smart Labels and RFID Tags and will continue to support legacy barcode labels.
- Labels can be designed in such a way that no new data is necessary for compliant EPC codes to be generated from existing data. However, if you are porting RFID smart labels, remember that in the previous Loftware RFID versions, block configuration was not supported. Changes to your label are required, but changes to your 'print time' system may not be necessary. This is demonstrated in examples later in this chapter.
- In general, although familiarity with the EPC or US Department of Defense tag specifications is encouraged, specific knowledge is not needed. All EPC/DoD intricacies are handled automatically.
- Although normal barcode labels can be printed on any printer with any license, the 'Loftware Premier Plus RFID' is required to enable the programming of RFID Smart Labels and tags.
- You must have a Loftware-supported RFID printer to print a programmed RFID smart label.
- You must have the Loftware RFID Reader Module and a Loftware-supported RFID reader to write to an RFID tag.. (Reading tag data is supported through the Loftware Reader Control API for developers.) Documentation is available in the Loftware RFID Reader Solutions User's Guide.)

RFID Tags vs. RFID Smart Labels

Loftware makes a distinction between RFID tags and RFID smart labels. An RFID tag consists of a transponder and an antenna. An RFID smart label is a barcode label with the RFID tag embedded between its substrates. For the most part, however, from the Loftware user's perspective, once the target RFID device has been configured, RFID tag and RFID smart label configurations are very similar.

Note that tag writing is acomplished through the Loftware RFID Reader Module. A comparison between these RFID media as used in Loftware is shown in the table below.

RFID Smart Labels	RFID Tags
Any field available on the toolbox, except another RFID field, can be added. These can be printing or non-printing fields.	Only text (labels and variable text) can be added to RFID tags, in addition to the RFID field. These text fields are non-printing fields.
RFID field can be deleted, but label will be printed as ordinary non-smart label. (Non-RFID fields defined as printing fields will be printed.)	RFID field cannot be deleted.
All data sources can be used for any field, except the RFID field.	Data source for text fields is limited to the Keyboard.
Data sources for RFID field can be either the Keyboard or Block Configuration.	Data sources for RFID field can be either the Keyboard or Block Configuration.

RFID Smart Labels	RFID Tags
Target device must be a Loftware-supported RFID printer, which is required to print data.	Target device must be a Loftware-supported RFID reader.
UHF 64-bit Class 1, UHF 96-bit Class 1, UHF 96-bit Class 0+, UHF UCODE EPC 1.19, UHF ISO 18000-6B, and UHF Class 1 Gen 2 tag types are supported, depending on target device.	UHF 64-bit Class 1, UHF 96-bit Class 1, UHF 96-bit Class 0+, UHS ISO 18000-6B tag types are supported, depending on target device.
HF support extended to include the Philips HF I-Code, Philips HF I-Code ISO 15693, TI HF Tag-it, TI HF Tag-it ISO 15693 tag types. Refer to the RFID Devices and Tag Types section of Appendix B for RFID printers that support HF.	HF is not supported. Refer to the Loftware RFID Reader Solutions User's Guide for information on RFID readers and the tag types each supports.
Note: In Loftware terminology: the terms "tag display" and "tag type" are used for both RFID tags and RFID smart labels.	
EPC and DOD encoding schemes for UHF and HF Tag Types supported by the target RFID printer.	EPC and DOD encoding schemes for UHF Tag Types are supported.
Saved to an LWL file	Saved to an LWR file
Requires Loftware Premier Plus RFID to print the label.	Requires Loftware RFID Reader Module with Loftware Premier Plus RFID to write to the tag.

Table 5-1: Comparison of RFID Tags and RFID Smart Labels in Loftware

The RFID Tag and Smart Label must be designed for an RFID device that supports the specific tag type. Refer to the section in Appendix B on RFID Devices and Tag Types for more information on RFID devices and the tag types each supports. RFID Readers are described in the Loftware RFID Reader Solutions User's Guide.

Setting up

When setting up RFID tags or smart labels in Loftware, you need certain information in order to choose the right options from the different Loftware dialogs. These include:

1. What is the target RFID device? For RFID smart labels, this is a Loftware-supported RFID printer that will print the labels. For RFID tags, this is an RFID reader that will write data to the tags. (RFID Readers are documented in a separate Loftware RFID Reader Solutions User's Guide.)

   In order to encode data on RFID labels or tags, an RFID device must support specific RFID commands. Some RFID devices exclusively support UHF tag types. Some printers support only HF tag types; a few support HF and UHF tag types.

2. What is the Tag Type? The available choices depend on the selected target RFID device. Tag Type determines the number and the size of user-programmable blocks.

   Supported UHF Gen 1 tag types include UHF 64-bit Class 1, UHF 96-bit Class 1, UHF 96-bit Class 0+, UHF UCODE EPC 1.19, and UHF ISO 18000-6B.

   Supported UHF Class 1 Gen 2 tag types include Impinj UHF Gen2 (Monza) and TI UHF Gen 2 (Dallas).

   Supported HF tag types include Philips HF I-Code, Philips HF I-Code ISO 15693, TI HF Tag-it, TI HF Tag-it ISO 15693.

3. What type of tag display will the data be written to? This is the actual physical tag that will be programmed and attached to the item. The available choices depend on the selected target RFID device.

   The choices include Alien 96 bit Squiggle, Alien Gen 2 Squiggle, Alien I2 Tag, Alien M Tag, Alien Omni Squiggle, Alien Squiggle, Avery 620 Triflex, Avery AD410, Generic Transponder, Impinj Gen 2 (Monza) Banjo, Impinj Gen 2 (Monza) Propeller, Philips I-Code, Philips I-Code ISO 15693, Rafsec Psychedelic, Symbol X1060, Symbol X2020, TI Gen 2 (Dallas), TI Tag-it, TI Tag-it ISO 15693.

4. What type of data will be encoded? This is the EPC or DoD Encoding Type. Each encoding type has its key benefits and reasons for usage. Each requires specific information that you may or may not have on hand, for example, a Company Prefix number, a Serial Number, etc. Class 1 Gen 2 tags require a 96-bit EPC identifier; 64-bit encodings cannot be used.

HF and UHF RFID

Loftware has added support for HF and UHF encoding schemes. This utilizes block structures of HF and UHF tags, which can vary, not only from one frequency to another, but many times from one tag type to another. The advantage of one frequency over the other is outside the scope of this document. We encourage you to refer to external sources for more information.

Loftware usage depends on the types of tags or labels you wish to encode.

Most RFID systems in the Ultra High Frequency (UHF) band operate between 868 and 930 MHz. Loftware supports tags that comply with EPCglobal and DOD coding standards for UHF. They include UHF 64-bit Class 1, UHF 96-bit Class 1, UHF 96-bit Class 0+, UHF UCODE EPC 1.19, or UHF ISO 18000-6B. Loftware now supports UHF Class 1 Generation 2 tags. Tag types differ in the block layout as shown in the table below.

UHF Tag Type	Loftware Configurable Blocks
UHF 64-bit Class 1	2 blocks: PC- (Pass Code) - block size = 1 byte (Refer to Block Configuration for more information on the PC block.) EPC - block size = 8 bytes
UHF 96-bit Class 1	2 blocks: PC- (Pass Code) - block size = 1 byte (Refer to Block Configuration for more information on the PC block.) EPC - block size = 12 bytes
UHF 96-bit Class 0+	3 blocks: KC - (Kill Code) - block size=3 bytes EPC- block size=12 bytes USR - block size=13 bytes
UHF UCODE EPC 1.19	1 block #0 - block size = 12 bytes
UHF ISO 18000-6B	1 block #0 - block size = 200 bytes
UHF Class 1 Gen 2	3 blocks AP – 4-byte Access Password KP – 4-byte Kill Password EPC – 12 bytes

Table 5-2: UHF Tag Types and Block Layout

	EPC Class 0+, Class 1 Gen 1	EPC Class 1 Gen 2
EPC data allocation	64 - 96 bits	96 bit EPC
Security	8-bit password	32-bit kill password (*KP*) 32-bit access password (*AP*)

Table 5-3: Comparison Between Gen 1 and Gen 2 Tag Types

In addition, the C1G2 specification allows for expanded data structures in a user-defined memory bank. C1G2 tags have four banks of non-volatile memory: Reserved Memory, EPC Memory, TID Memory, and User Memory.

Reserved Memory – holds the tag's passwords: a 32-bit Kill password that allows a tag to be permanently disabled, a 32-bit Access password that allows a tag to transition to a secured state.

EPC Memory – contains a 16-bit CRC, a 16-bit Protocol Control, and an EPC.

TID Memory – Tag ID memory contains the tag manufacturer, model number, and other information added by the manufacturer (for example, the tag serial number).

User Memory – optional memory area – contains user-specified data.

Loftware allows access to CIG2 tag's Kill Password (*KP*), Access Password (*AP*), and EPC memory blocks.

RFID tags and smart labels can be created in Loftware using UHF 64-bit Class 1, UHF 96-bit Class 1, UHF 96-bit Class 0+, UHF UCODE EPC 1.19, and UHF ISO 18000-6B tag types. Tag types available depend on whether these are supported by the target RFID device. Refer to the section on RFID Devices and Tag Types in Appendix B.

High Frequency (HF) smart labels use the RF tagging system in the 13.56 MHz frequency range. Supported HF tag types include the Philips HF I-Code, Philips HF I-Code ISO 15693, TI HF Tag-it, and TI HF Tag-it ISO 15693.

HF Tag Type	Configurable Blocks	Other Available Block Configuration Settings
Philips HF I-Code	11 blocks: blocks 5 to 15 block size = 4 bytes each	Lock Tag After Writing, Overflow, EAS, AFI
Philips HF I-Code ISO 15693	28 blocks: blocks 0 to 27 block size = 4 bytes each	Lock Tag After Writing, Overflow, EAS, AFI, DSFID
TI HF Tag-it	8 blocks: blocks 0 to 7 block size = 4 bytes each	Lock Tag After Writing, Overflow
TI HF Tag-it ISO 15693	64 blocks: blocks 0 to 63 block size = 4 bytes each	Lock Tag After Writing, Overflow, AFI, DSFID

Table 5-5: HF Tag Types and Loftware-Configurable Blocks

RFID Standards

Several organizations are involved in drafting specifications for RFID applications. EPCglobal® has focused its work primarily in the UHF range. The US Department of Defense (DoD) has mandated that its suppliers encode RFID tags using EPCglobal or DoD tag constructs.

EPCglobal® Standards

Loftware follows the standards set forth by EPCglobal®, which is a joint venture between GS1 (formerly EAN International) and GS1 US (formerly Uniform Code Council (UCC)). They create the global standards which are necessary for tracking goods through the supply chain using RFID tags and smart labels.

EPC standards and the equipment used to produce the RFID tags and smart labels are still evolving and are expected to do so for quite some time. The next table lists the EPC standards that were followed during the development of the Loftware RFID functionality. We strongly recommend that you obtain a copy of these specifications for your reference. As the standards evolve and new equipment becomes available, Loftware remains committed to providing service packs and new releases to keep up with these changes. Please check the online documentation on the Loftware website often for the latest changes to the EPC standards, as well as those made to the Loftware RFID Solution in response to EPC changes.

Standard	Source	Version
EPC Tag Data Standards	EPCglobalinc.org website	V1.1 Rev. 1.27
Global Trade Item Number (GTIN) Implementation Guide	UC-Council.org website	May 2004
Serial Shipping Container Code (SSCC) Implementation Guide	UC-Council.org website	May 2004
Global Location Number (GLN) Implementation Guide	UC-Council.org website	May 2002
EPC RFID Class 1 Generation 2 UHF Conformance Requirements	EPCglobalinc.org website	V1.0.2
EPC Class-1 Generation-2 UHF RFID Protocol for Communications	EPCglobalinc.org website	V1.0.9

Table 5-6: Specifications used by Loftware for calculating EPC compliant RFID codes

DoD RFID Requirements

The US Department of Defense (DoD) has defined requirements and guidelines related to RFID tagging of shipments that its suppliers must follow. The DoD standards are available from the following online resources:

Standard	Location
DoD Suppliers' Passive RFID Information Guide Version 7.0	www.dodrfid.org/supplierguide.htm
Passive UHF RFID Tag Specifications & Requirements DoD EPCglobal DoD non-EPCglobal	www.dodrfid.org

Table 5-7: Resources for DoD Specifications

The DoD Guide explains how suppliers can encode tags using either the EPCglobal tag data construct or the DoD tag data construct. The choice depends on whether or not a supplier is a member of EPCglobal (or plans to join EPCglobal). Refer to the DoD Encoding Type section in this chapter for additional information.

ISO Standards

ISO/IEC 15693 was originally intended to define the way RFID "Contactless Integrated Vicinity Cards" look and communicate. It has been adopted by major RFID companies as a guideline for transponders (RFID Smart Labels and tags). The specifications it describes include transmission parameters and protocol. Its command set covers reading, writing, and locking data for single and multiple blocks.

ISO 18000 deals only with air interface protocol, the rules that govern how tags and readers communicate. Where EPC defines coding structure, Object Naming Service, physical implementation of tags and readers, and air interface, ISO 18000 is not concerned with data content or structure or the physical implementation of tags and readers. Tags made according to ISO 18000 are simply able to carry data that is EPC-compliant.

The ISO/IEC 15693 and ISO 18000 standards are available from the ISO website, www.iso.org.

Loftware Concepts

The table below illustrates the different concepts that will help you in using the Loftware RFID functionality. Please take the time to understand these concepts fully before continuing with RFID encoding.

Concept	User's Guide
Configuring RFID Devices	Loftware Label Manager, Chapter 2
Data Sources	Loftware Label Manager, Chapter 8
RFID Devices and Tag Types	Loftware Label Manager, Appendix B
General Tutorials	Quick Start, Chapter 5
RFID Readers	Loftware RFID Reader Solutions User's Guide

Table 5-8: Loftware Concepts on RFID tag programming

Loftware RFID Requirements

RFID License Requirements

In order to use Loftware's RFID capabilities, you must have the appropriate license. You may view your license from the Help | About screen in Label Design Mode. License settings required for using the Loftware RFID Solution are described in the License Information and Registration section of the Installation chapter and in the Configuring RFID Devices section of the Device Connections chapter.

To reiterate important RFID license information about using the Loftware RFID functionality:

- You must have the Loftware Print Server Premier edition with the RFID option.
- You must have an RFID Printer license to print RFID Smart Labels. You may use an RFID Printer license to drive a non-RFID Printer, but not vice versa.
- You must have an RFID Reader Module license to write data to tags. Please refer to a separate Loftware RFID Reader Solutions User's Guide for more information.
- Reading RFID Tag data is supported only through the Reader Control API for developers. Please refer to a separate Loftware RFID Reader Solutions User's Guide for more information.

Please contact Loftware's Customer Service department at 603.766.3630 (follow the phone prompt for "Customer Service") to purchase the RFID Solution, the RFID Reader Module, or additional RFID printer or reader module seats.

RFID Device Requirements

Loftware adds support for RFID devices as they become available.

You must have a Loftware-supported RFID Printer in order to print a working RFID 'Smart' label. A list of supported RFID devices can be found in Appendix B of this guide, as well as on the Products section of the Loftware website. RFID Readers are documented in a separate Loftware RFID Reader Solutions User's Guide.

- Make sure that the label stock or tag that you choose is approved by your device manufacturer.
- Be sure you understand how your device handles tag programming errors and bad tags. Most manufacturers have several settings for retry, overstrike, etc.
- Familiarize yourself with how to set up your device for RFID. Take any training courses that you can to better familiarize yourself with the hardware.
- Appendix B of this manual has more information on specific RFID settings that can be set via the software for the target RFID device. However, the documentation that comes with your device should be your primary source of information.
- Appendix B also has information on Loftware RFID Devices and the Tag Types each supports.

Creating RFID Smart Labels

Creating non-RFID labels is described in Chapter 3. Creating RFID Tags is described in the next section. This section describes how to set up RFID smart labels.

1. Select **File | New**.

   This launches the New Media Wizard which will guide you through the step-by-step process of creating a new label, an RFID label, or an RFID tag.

2. From the Welcome screen, click on **Next**. This brings up the Media Type Selection dialog of the New Media Wizard,

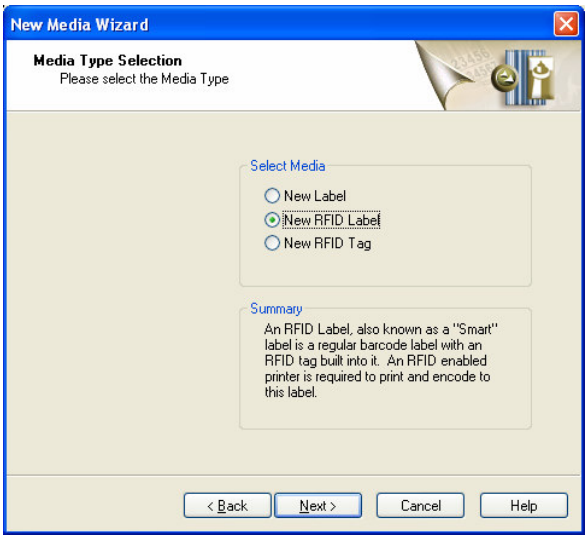

Figure 5-A: Select the Media Type

3. From the "Select Media" section of the New Media Wizard, select **New RFID Label**. Click **Next**.

New RFID Label Setup - Select a Template Type

The Template Type Selection dialog gives you two options:

- Select **Blank RFID Label** if you wish to design your label from scratch.
- Select **RFID Compliance Template Label** if you wish to pattern your label after an existing template.

4. Click on **Next** after selecting the template type.

New RFID Label Setup - Select an RFID Target Device

You are prompted to select a Target Device for your label. For RFID Smart Labels, this is an RFID printer that will print the label that you design.

The Manufacturer list is limited to Loftware-supported RFID printer families. Selecting a Manufacturer further limits the list of Models to RFID printers belonging to the selected printer family.

5. Select an RFID printer Manufacturer and Model. Click on **Next**.

New RFID Label Setup – Set Field and Media Options

6. If you chose to create a **Blank RFID Label** in Step 4, complete the next steps (a to e):

   a. In the **Field List Selection** section, the default "None" is the only selection available unless there is an LLMFIELD [.lst] file in the main Loftware folder. LST files provide a means of constraining the field names on a label to a pre-defined list. If .lst files are

available, these are listed in the drop-down list. (See the "Advanced Techniques" chapter for information on .lst files.)

b. **Select Tag Type** – This lists the tag types supported by the target printer you selected in step 5.

   In order to encode data on RFID smart labels, RFID printers must support specific RFID commands. Some RFID printers support encoding to specific UHF tag types. Others will write only to specific HF tags. A few support specific UHF and HF tags. Refer to the RFID Devices and Tag Types section of Appendix B for a list of Loftware RFID devices and the tag types each supports. (Note that you can change the tag type after the label is created from the RFID field's property sheet.)

c. **Select Tag Display** –These are the tangible tags that will be programmed to store the data and then attached to items. (Note that you can change the tag display after the label is created from the RFID field's property sheet.)

d. Enter the height and width of the label stock for the target printer. As you change the dimensions of the label, they are reflected in the **Preview** section.

e. Set the orientation for this label. The default is 0º. (Information on print orientation is found in the "On-Screen Label Presentation" section.) Click on **Next**. The last step in creating a new blank RFID Smart Label is described in Step 7.

Select an RFID Compliance Label Template

If you chose to create a label based on an **RFID Compliance Template Label** in Step 4, after selecting the target printer, the Template Type Selection displays available RFID label templates.

Compliance label templates provide a quick starting point for designing a label. Loftware includes a number of pre-built templates that you can use as is or as a starting point for your new label. (You can customize your own template and add it to the template selections. Refer to the Templates chapter for more information.)

a. Select the compliance template you want to use from the list. When a selection is made, a preview and a description of the template are displayed.

b. Press **Next**.

New Media Wizard Summary

7. A summary of your selected settings is displayed. If you wish to make changes, click on **Back** to return to the dialog where you wish to make changes. Otherwise, click on **Finish**.

An RFID antenna icon is automatically dropped on the label. If you selected to use a compliance label template, there may be other fields on the label.

Keep in mind that the antenna icon is merely a placeholder for the RFID field. This allows you to view its approximate location on the label, making it easier to design other fields around it. Check its location on the label as you may need to move it up or down, depending on your particular label stock. You may also change the Tag Display property to better reflect the physical characteristics of your label stock.

You can now set properties and define the data source for the RFID field. You can also add other fields on the label.

Note: *If you have not configured the target printer for this label, when you specify label settings in Media Setup (F5), a warning is displayed.*

Converting a Barcode Label to an RFID Smart Label

Converting an existing barcode label to a RFID Smart Label can be a simple process. You cannot convert a barcode label directly to an RFID tag, but you can use information contained in the barcode label to create an RFID tag.

The example below shows a label with the normal address fields and a barcode that has a UCC assigned Company Prefix and an Item Reference Code. The combination of the Company Prefix and Item Reference Code forms the basis for GTIN (Global Trade Identification Number) product identification. GTIN, together with the Serial Number, is used in the SGTIN (Serialized GTIN) specification. You will need serial number information to convert the barcode label to an RFID smart label using SGTIN encoding.

1. Use File | Open to bring up the label in Design mode. It may look similar to the following figure:

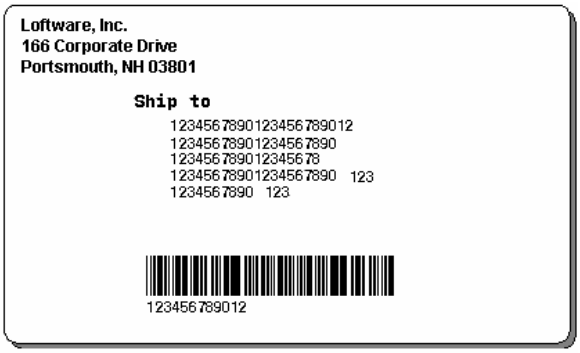

Figure 5-B: An example barcode label

2. Before you can add an RFID field to the label, you must specify the target RFID printer. Right click on the label and select **Media Setup** from the popup menu (or press on F5).

3. Select a target printer Manufacturer and an RFID printer Model from the Label Setup dialog. Click on **OK**.

4. If the selected printer has not been configured, you will be alerted and given the choice of doing so or of configuring it at a later time. A warning message may also tell you of changes to the label needed for the selected target printer.

5. Next, add the RFID field by clicking on the antenna tool button  and then click on its location on the label. This places an antenna icon on the label.

6. To configure the RFID field, refer to the SGTIN section Example 3 for the next steps.

Data Sources for Label Text Fields

Any field available on the toolbox, except another RFID field, can be added to an RFID smart label. In addition, you can utilize data sources other than the Keyboard to obtain values for the text fields. In contrast, only text fields can be added to an RFID tag, and the data source of the variable text fields on an RFID tag is limited to the Keyboard.

The examples below are abbreviated examples that demonstrate deriving data values from sources other than the keyboard. These examples do not apply to RFID tags which limit the data source for any variable text on it to the Keyboard source.

In the first example, a label includes a barcode field that contains the Item Reference value. The Serial Number value is set to automatically increment for each label that you print from a starting value that you specify.

1. Load or design the label. (Refer to Creating RFID Smart Labels in this chapter, if needed.)

   Using the  tool, add ItemReference and SerialNumber variable text fields. Also add a barcode field, that you can call ProductCode, to the label.

2. For this example, set these fields to the following:

ItemReference – Formula

   a. Set its Data Source to **Formula**.

   b. Select the **Mid-String** operation in the Formula data source.

   c. Select the field name of the barcode field (ProductCode).

   d. Set the 2nd value of the Mid-String Operation to **7**.

   e. Set the 3rd value of the Mid-String Operation to **5**.

   This field automatically gets the 5 digit ItemReference field starting at position 7 in the ProductCode barcode field. Thus, if the ProductCode value is 09401234567894, the extracted ItemReference value would be 34567.

SerialNumber – Serial Number

   a. Set its Data Source to **Serial Number**.

   b. From the Data Source dialog, click on **Edit**. Set the attributes to **Numeric Only**, Increment by **1**, Length of **8**, and a starting value of **10029343**.

      This value automatically increments the 8-digit Serial Number, starting at 10029343 for every label you produce.

In the next example, values for the ItemReference and SerialNumber fields on the label are obtained from a database.

1. Create and populate a database that include fields for the 5-digit ItemReference and 8-digit SerialNumber. Set the ItemReference field as the primary key field. This will serve as the look-up field for the database.

2. Set an ODBC connection to the database. (See Appendix A for information on how to connect to your database using ODBC, if needed.)

3. Using the label you just created above or a similar label with the same fields, select the ItemReference field. Click on the Data Source ellipsis button to access the Data Source dialog. Change its data source to Database-Key.

   a. Select the ODBC Data Source name of the database you just set up in steps 1 & 2. Select the table containing the values, if there is more than one table in the database.

   b. From the Field box, select the ItemReference field.

   c. Click on OK.

4. Follow the same steps to set up the data source for the SerialNumber field, but set its data source to Database-Data.

These are just a few ways you can obtain values for fields on your RFID Smart Label. Refer to the Data Sources chapter for more information.

Setting RFID Field Properties

Only a few of the fields described in the Chapter 3 section on properties are relevant to RFID fields.

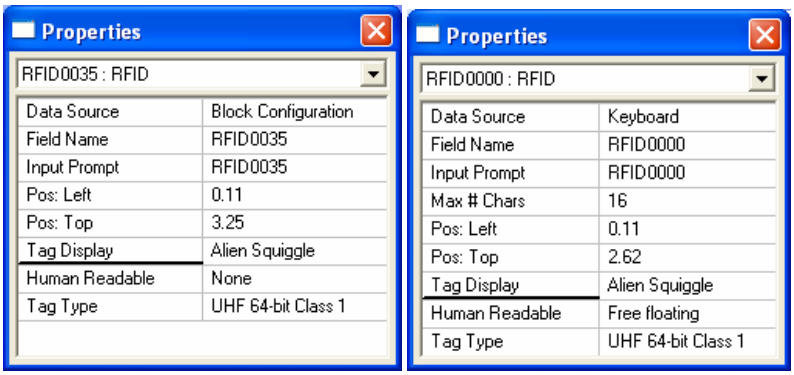

Figure 5-C: RFID Field Properties for Block Configuration and Keyboard Data Sources

Data Source – For RFID fields, the choices are limited to *Keyboard* and *Block Configuration*. Refer to Data Sources for RFID Fields in this chapter for more information.

Tag Display - These are the tangible tags that will be written on to store the data and then attached to items. The tag design choices include Alien Squiggle, Alien M Tag, Alien I2 Tag, Symbol X1060, Symbol X2020, Generic Transponder, and Rafsec Psychedelic.

Human Readable – Human readables are an interpretation of the encoded RFID data using fonts that can be read by a human operator. Choices are None, Free floating, and Read Tag.

For HF tag types and RFID tags (LWR), this is not supported; the only available setting is *None*.

For an RFID Smart Label with a UHF tag, when the target RFID printer supports it, the *Free floating* and *Read Tag* settings can be selected and shown on the tag. When *Read Tag* is selected and the target RFID printer supports it, the printer reads the tag after encoding and shows the data that is on the tag in a human readable field. *Free floating* is the data sent to a tag.

Tag Type – These are the HF/UHF tag protocols supported by the target RFID device. RFID tags and smart labels can be created in Loftware using UHF 64-bit Class 1, UHF 96-bit Class 1, UHF 96-bit Class 0+, UHF UCODE EPC 1.19, and UHF ISO 18000-6B tag types. Smart labels can also be created using Impinj UHF Gen 2 (Monza) and TI UHF Gen 2 (Dallas) tag types. HF tag types include Philips HF I-Code, Philips HF I-Code ISO 15693, TI HF Tag-it, and TI HF Tag-it ISO 15693. Tag types available depend on whether these are supported by the target RFID device. Refer to the section on RFID Devices and Tag Types in Appendix B.

Creating RFID Tags

Creating non-RFID labels is described in Chapter 3. Creating RFID Smart Labels is described in the previous section. This section describes how to set up RFID tags.

***Note**: While you can set up your RFID tag and RFID Readers in LLM, writing data to the RFID tag using a Loftware-supported reader can only be done with the Loftware RFID Reader Module, an optional LPS component. Refer to a separate Loftware RFID Reader Solutions User's Guide for more information.*

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1. Select **File | New**. From the New Media Wizard welcome screen, click on **Next**.
2. From the "Select Media" section of the New Media Wizard, select **New RFID Tag**. Click **Next**.

New RFID Tag Setup - Select an RFID Target Reader

3. You are then prompted to select a Target Device for the new tag. For RFID tags, this is an RFID reader that will write encoded data to the tag.

   The Manufacturer list and the corresponding Models are limited to Loftware-supported RFID Readers.
4. Click **Next** after selecting an RFID Reader.

New RFID Tag Setup - Set Tag Field and Media Option

5. In the **Field List Selection** section, the default "None" is the only selection available unless any LLMFIELD [.lst] lists have been created. LST files provide a means of constraining the field names to a pre-defined list. If any LST files are available, they are shown in the drop-down list. (See the "Advanced Techniques" chapter for information on .LST files.)
6. **Select Tag Type** – This lists the EPC tag protocols supported by the target reader you selected in step 3.
7. **Select Tag Display** – This lists the types of tags or labels that will be programmed to encode the data. These are the actual tags that will be programmed and attached to items.

   The Tag Description section of the dialog reflects the current selections.
8. Click on **Next**.

New RFID Tag Setup – New Media Wizard Summary

9. A summary of your selected settings is displayed. If you wish to make changes, click on **Back** to return to the dialog where you wish to make changes. Otherwise, click on **Finish**.

An RFID antenna icon is displayed on the tag to represent the RFID field. You can now set properties and define the data source for the RFID field.

Note that you can only add text fields to RFID tags. Note also that for RFID tags, variable text fields can obtain their data only from the keyboard. Other data sources are unavailable.

***Note**: When you save your RFID tags, they are saved using the .LWR file extension. This differentiates them from RFID Smart Labels which are stored as .LWL files.*

Data Sources for RFID Fields

Keyboard

The Keyboard data source is the default for RFID fields. The Keyboard data source now accepts data in ASCII or hexadecimal format. Refer to the Keyboard section of the Data Sources chapter for information on the entry fields on this dialog.

***Note**: Any field available on the toolbox, except another RFID field, can be added to an RFID smart label. In addition, you can utilize data sources other than the Keyboard to obtain values for the text fields. In contrast, only text fields can be added to an RFID tag, and the data source of the variable text fields on an RFID tag is limited to the Keyboard.*

To define Keyboard Data Source settings:

- Double click on the RFID antenna icon on the tag or label. Alternatively, right click on the selected antenna icon and select Edit Data Source from the popup menu.

Block Configuration

From the Block Configuration dialog, data source and the data that will be encoded can be specified for each block.

Tag Type: This lists the HF/UHF tag protocols supported by the target RFID device. Refer to Appendix B sections on Tag Configuration and RFID Devices and Tag Types.

Block #: This shows the block type or block number. The number and type of blocks available depend on the selected Tag Type, as shown in the table below.

	UHF Gen 1				UHF Class 1 Gen 2	HF Tags
	Class 1	Class 0+	UCODE EPC 1.19	ISO 18000-6B		
PC	√					
KC		√				
AP					√	
KP					√	
EPC	√	√			√	
USR		√				
# ***X*** to ***n***		Block # **1**	Block # **0**	Block # **0**		*# X to n*

Table 5-9: Loftware Block # Field Choices

- *PC*: Used for a 64-bit and 96-bit Class 1 Gen 1 tags, this is the Pass Code, a 1-byte value used to deactivate the tag and render it unresponsive to reader commands. The Pass Code is required to lock the EPC block and/or to enable *Lock Tag After Writing*. The *Lock* setting of the *PC* block is disabled.
- *KC*: Used for a Class 0+ tag, this is the Kill Code, a 3-byte value that deactivates the tag.
- *AP*: Used for a Class 1 Gen 2 tag, this is the Access Password, a 4-byte value that allows access commands to be executed, including writing to locked blocks, and sets the tag in secure state. To lock the *EPC* or the *KP* block of a Class 1 Gen 2 tag, *AP* must first be set.
- *KP*: For a Class 1 Gen 2 tag, this is the Kill Password, a 4-byte value that will be used to deactivate the tag. *AP* must first be set.
- *EPC:* Used to select an EPC or DOD encoding from the Data Source column.
- *USR*: For a Class 0+ tag, this block can be used for 13 bytes of user data.

For the HF tag type, this column lists the configurable block number (from X to n).

Data Source

- *Unused*: No data will be sent to this block.
- *Fixed*: When selected, data for this block can be directly entered in the Data column.
- *Field*: When selected, an existing field on the label or tag can be chosen from a drop down list in the Data column. The list is limited to variable text and barcode fields for labels. For tags, this is limited to variable text fields.
- *New Field*: When selected, a field name can be entered in the Data column that does not yet exist on the label but will be specified later.
- *EPC*: Available for the *EPC* block; when selected, you can launch the EPC Configuration dialog from the Data column. Refer to the EPC Encoding Types section for information. Once the EPC portion has been configured, the Data column for this row will show the EPC Encoding Type.
- *DoD*: When selected, you can launch the DOD Configuration dialog from the Data column. Refer to the DoD Encoding Type section for more information.

Note: There can be only one block with an EPC or DoD data source for a label or tag. Once you have a block configured using any of the EPC or DoD encoding types, other blocks that you wish to configure must use any of the other data sources (Unused, Fixed, New Field, or Field).

Input Type: The format of the data input. Selections include **ASCII**, **Decimal**, and **Hexadecimal**. Depending on the requirements of the device and the selected option, conversions may be applied to the data being passed to the device.

Padding: When data for a block is smaller than the data allocated for the block, the Bytes value is shown in red. You must select whether the padding should be added to the *Left* or to the *Right* of the data. *None*, for no padding, is the default.

Pad Char: When Left or Right padding is selected for a block that requires data padding, the character that will be used for padding can be selected – *Zero* or *Space*.

Bytes: This is the size in bytes of the data for this block. This is filled in once the block has been configured and depends on the selected Data Source and the Data being sent to the device. If this is shown in red, the data value is either too small or too big for the block.

Block Size: The maximum size (in bytes) of the block. If data defined for the block is too small or too large for the block, a warning message is displayed. See Padding and Overflow settings.

Lock and **Lock Tag After Writing**

- UHF 64-bit / UHF 96-bit Class 1 Gen 1- For these tags, you must first specify a *PC* to lock the EPC block or to enable the *Lock Tag After Writing* setting. The *Lock* check box of the *PC* block is disabled.

- UHF 96-bit Class 0+ - EPC / USR blocks can be locked and *Lock Tag After Writing* can be enabled, passcode is not required (no passcode field).

  For the above tags (UHF 64-bit, UHF 96-bit Class 1 Gen 1, UHF 96-bit Class 0+), the *Lock* box is an *L* (on) or *OFF* setting. When *Lock Tag After Writing* is enabled for these tags, the *Lock* state of the EPC or the USR block cannot be changed without first turning *Lock Tag After Writing* off.

- UHF ISO 18000-6B, UHF UCODE EPC 1.19 – Each has only one block and its *Lock* box is disabled. However, *Lock Tag After Writing* can be set.

- HF - *Lock* can be set for each block. *Lock Tag After Writing* can be set.

- UHF Class 1 Gen 2 - To set the Lock setting to anything other than *Off* for the *KP* or the *EPC* block, the Access Password (*AP)* must be set. The available Lock options depend on the target device:

  U – Unlock: The tag is writeable in any state.

  L – Lock, prevents the block data from being changed, in any state (open or secure).

  UP – Unlock Permanently: The tag is writeable in any state; the Unlocked status of the block cannot be changed.

  P – Protect: A tag that is "protected" can be written to if the tag is in the secure state (with Access Password).

Overflow – If data defined for a block exceeds the size assigned to the block, this allocates additional space from the next undefined adjacent blocks. For example, if block #5 requires 12 bytes for its data but it only has 4 bytes allocated to it, if Overflow is enabled and the next adjacent blocks (blocks 6 and 7) are unused, the allocated bytes for these blocks will be assigned to accommodate the data in block #5. The rows used for the overflow are shaded and cannot be configured. Note that only HF tags support Overflow allocation.

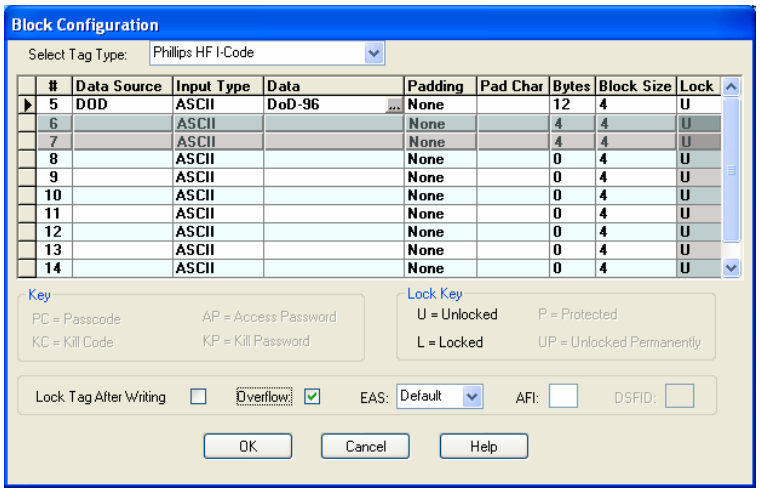

Figure 5-D: Using HF Tag Overflow allocation

AFI and **DSFID** – Some HF tag types that are defined by the ISO 15693 standard support having an assigned Application Family Identifier (AFI) number and a Data Storage Format Identifier (DSFID). These provide additional information. DSFID indicates how the data is structured in the tag memory. AFI is used to group select tags. When the **AFI** or the **DSFID** entry field is enabled, you can enter the tag ID number for the field.

EAS - Electronic article surveillance, an item-tagging system that, when turned on, sounds an alert when an item that the EAS tag is attached to leaves an area. This is currently supported by the Philips HF tag types.

EPC Configuration

Note: There can be only one block with an EPC or DoD data source for a label or tag. Once you have a block configured using any of the EPC or DoD encoding types, other blocks that you wish to configure will be limited to the other data sources (Unused, Fixed, New Field, or Field).

The options available on the EPC Configuration grid depend on the EPC Encoding Type selected.

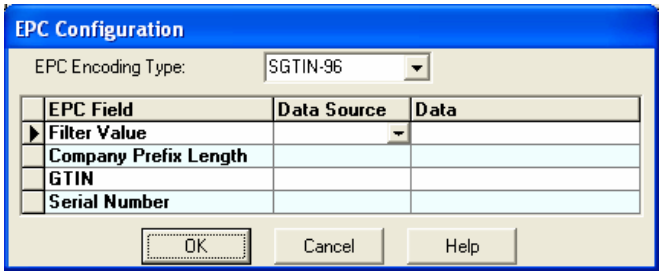

Figure 5-E: EPC Configuration Grid

EPC Encoding Type: This lists the available EPC encoding schemes that can be used to create an EPC-compliant label or tag. Currently, the choices are: GID-96, SGLN-64, SGLN-96, SGLN-96 ALT, SGTIN-64, SGTIN-96, SGTIN-96 ALT, SSCC-64, SSCC -96, and SSCC -96 ALT. Refer to the EPC Encoding Types section for more information.

EPC Field: This lists EPC fields based on the selected EPC Encoding Type. (These fields are described in the specific sections on the EPC Encoding Type.)

Data Source / Data:

- *Fixed*: When *Fixed* is selected, data for this EPC field can be directly entered in the Data column.
- *Field*: When *Field* is selected, an existing field on the label can be chosen from a drop down list in the Data column. For labels, the list of fields is limited to variable text and barcode fields. For tags, only variable text can be used.
- *Choice*: When *Choice* is selected, a drop down list in the Data column restricts values for this EPC field to a predefined list.
- *New Field* – When *New Field* is selected, a field name can be entered in the Data column that does not yet exist on the label but will be specified later.

Click **OK** when all EPC fields have been defined. A warning is displayed if there are missing entries in any EPC field.

DoD Configuration

Note: There can be only one block with an EPC or DoD data source for a label or tag. Once you have a block configured using any of the EPC or DoD encoding types, other blocks that you wish to configure must use any of the other data sources (Unused, Fixed, Field, or New Field).

The options available on the DoD Configuration grid are similar for both 64-bit and 96-bit DoD Encoding Types. They differ in data size allowed.

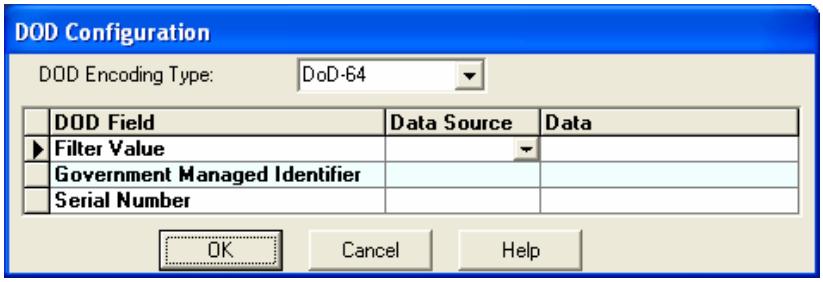

Figure 5-F: DOD Configuration Grid

The following table describes the DoD fields available from the DoD Configuration dialog.

DoD Field	Description
Filter Value	This specifies packaging level and identifies a pallet, case, or item (0, 1, 2).
Government Managed Identifier:	This field uses a unique Commercial and Government Entity (CAGE) alphanumeric code assigned to a supplier by the DoD. See the next section, DoD Encoding Type, for more information.
Serial Number	This is a number assigned by the supplier (the holder of the CAGE code) to uniquely identify the item.

Table 5-10: DoD Fields for DoD Encoding

Data Source / Data:

- *Fixed*: When *Fixed* is selected, data for this DOD field can be directly entered in the Data column.
- *Field*: When *Field* is selected, an existing field on the label can be chosen from a drop down list in the Data column. For labels, the list of fields is limited to variable text and barcode fields. For tags, only variable text can be used.
- *Choice*: When *Choice* is selected, a drop down list in the Data column restricts values for this EPC field to a predefined list.
- *New Field* – When *New Field* is selected, a field name can be entered in the Data column that does not yet exist on the label but will be specified later.

DoD Encoding Type

DoD tag construct has been added to the Loftware RFID Solution as an option for DoD suppliers who are not members of and do not intend to join EPCglobal. DoD encoding guidelines are specified in DoD Suppliers' Passive RFID Information Guide Version 7.0.

To encode a DoD tag, the following fields are placed in the proper order within the 64 bits or 96 bits of the tag:

1. **DoD header value** – This specifies whether the data is encoded as a DOD-64 or a DOD-96 tag construct.
2. **Filter value** – This identifies a pallet, a case, or a UID item. The values are the same for DOD-64 and DOD-96.
3. **CAGE Code** – This is a unique Commercial and Government Entity (CAGE) code assigned to the supplier by the DoD. To encode the alphanumeric 5-character CAGE code, a simple algorithm is used. For DoD-64 constructs, it is compressed by truncating the two most significant bits of the 8-bit ASCII representation of the characters. For DoD-96, an ASCII space char is prepended to the CAGE code. The mapped values are listed in the DOD document referenced above. The result is the Government Managed Identifier value.

4. **Serial Number** – This uniquely identifies the tagged item.

The 64-bit or 96-bit binary (base 2) number is then converted into hexadecimal (base 16) format for encoding. The result is a unique number that can be written to the tag.

The table below shows the hex result of the two examples given in the DoD Guide referenced above. We can use the values in the DoD encoding examples that follow.

Encoding Type	CAGE	Filter Value	Serial #r	Hex Result
DoD-64	1D381	1	16522293	CE71133E31FC1C35
DoD-96	2S194	0	12345678901	2F02032533139342DFDC1C35

Table 5-11: DoD encoding results using sample values

Example 1 - DoD-96

In this example, a supplier with an assigned CAGE code is encoding a 96-bit tag on a case of goods. Note that the steps to create a DoD-64 tag are very similar. The DoD fields are the same but differ in the data size. Note, however, that DoD-64 encoding cannot be used with Class 1 Generation 2 tag types, which require a 96-bit EPC identifier.

1. Create an RFID Smart Label or tag. (See Creating RFID Smart Labels or Creating RFID Tags, if needed.)

   For this example, using the  tool, we will add 2 variable text fields to the label or tag:

   a. A field called Company_GID that contains the company CAGE code

   b. A serial number field called SerialNum

   Alternatively, if you are simply following along with the exercise, you can forego creating these fields and supply the values from the previous table directly into the DoD Configuration grid.

2. Double click on the RFID antenna icon. (Alternatively, select and then right click on the RFID antenna icon. From the popup menu, select **Edit Data Source**.)

3. From the Data Source dialog, select **Block Configuration** and then click on the **Configure** button to launch the Block Configuration dialog.

4. Select **UHF 96-bit Class 1** from the Select Tag Type list.

   Note: In previous Loftware RFID versions, Loftware programmed the RFID field as one unit. Block composition did not come into play. Nonetheless, it was designed to produce an EPC that uniquely identified the tagged item. Because block structure was not utilized, most of the settings for the RFID field were selected or assigned from its property box. The RFID field's properties that could be set from its properties box included its Tag Type, its EPC Encoding Type, its Filter Value, etc. In addition, any field needed to pass a value to the RFID field had to have its RFID Link Field property set to 'Yes' and its RFID Link Field Name property set to a field from which the value was derived.

5. In the EPC block, select **DOD** from the Data Source column. Click in the Data cell and then click on its ellipsis button.

6. From the DOD Configuration dialog, set the 'DOD Encoding Type' property to **DoD-96**.

   Refer to the DoD Configuration section for a description of DoD fields on this dialog.

7. Set the **Filter Value**. In this example, select the **Choice** Data Source, and select **0** from the Data drop-down list. This denotes case packaging level.

8. For the **Government Managed Identifier**:

   If you had set variable fields in step 1, set its Data Source to **Field** and then select **Company_GID** from the Data drop-down list.

   If you are simply following along with the exercise, you can enter the value directly by selecting the **Fixed** Data Source and then entering **2S194** in the Data entry box.

9. For the **Serial Number**:

   If you had set variable fields in step 1, set its Data Source to **Field** and then select **SerialNum** from the Data drop-down list.

   If you are simply following along with the exercise, you can enter the value directly by selecting the **Fixed** Data Source and then entering **12345678901** in the Data entry box.

10. Click **OK**. Then, click on **OK** to exit Block Configuration.

    Note that the Data Source dialog shows a summary of the configured block.

11. Click **OK** to exit the Data Source dialog.

Creating a tag or label using DoD-64 encoding is very similar to the example above. It uses the same DoD fields for encoding the data. The difference is the size of the data that can be written to the block.

Note: For all examples in this chapter, you can use the Loftware RFID Calculator application to help you verify the encoded data. Encoding and decoding examples of using this tool are provided in this chapter.

EPC Encoding Types

This section describes the EPC encoding schemes used in Loftware and the fields required to program EPC data. Examples are included to quickly demonstrate their use.

All EPC encodings are designed to produce a unique number. In addition to a header, EPC encodings include one or more value fields that contain a unique EPC identifier and an optional Filter value. The EPC encoding type you use may depend on a number of things, including specified requirements, the type of data you include or have available to identify objects or classes.

Note: All 96-bit examples included in this chapter can be used for Class 1 Generation 2 (C1G2) tag types. Generation 2 tags require a 96-bit EPC identifier. Thus, 64-bit encodings cannot be used with C1G2 tags.

To apply the 96-bit encoding examples to Class 1 Generation 2 tags, verify that the label is configured for a device that supports C1G2 tag types. (Refer to Appendix B for tag types that each Loftware RFID device supports.)

General Identifier (GID-96)

The General Identifier (GID-96) encoding type is a general identity type defined for a 96-bit EPC. In addition to the header, it is composed of the following fields:

GID-96 EPC Field	Description
General Manager Number	This is a unique number assigned by EPCglobal to identify an entity – a company, a manager, or an organization. This General Manager entity is responsible for maintaining the numbers in the Object Class and Serial Number fields.
Object Class	This number, which must be unique within each General Manager Number domain, identifies a class or "type" of thing.
Serial Number	This number must be unique within each Object Class.

Table 5-12: EPC Fields for GID-96 EPC Encoding

GID-96 is encoded by concatenating the following fields, from most significant to least significant: Header, General Manager Number, Object Class, and Serial Number.

Example 2 - 96-bit GID

Once you have your General Manager Number assigned to you by the EPC, you can use the 96-bit GID to encode your RFID Smart Label or tag by supplying unique numbers for each class within your domain (Object Class) and unique Serial Numbers for items within the Object Class.

Note: All 96-bit examples included in this chapter can be applied to Class 1 Generation 2 tag types. Generation 2 tags require a 96-bit EPC identifier.

In this example, the General Manager Number and the Object Class fields have fixed values. The Serial Number obtains its value from a Serial Number data source, for an RFID smart label. (Note that for an RFID Tag, you can use the Keyboard data source.)

1. Load (or design) the RFID smart label or tag. (Refer to Creating RFID Smart Labels and Creating RFID Tags in this chapter, if needed.)

2. Using the  tool, add a variable text field for the Serial Number field.

   We will specify the data source for the Serial Number:

   a. Double click on the Serial Number field to access the Data Source dialog.

   b. Select Serial-Number data source, and click on the Edit button.

c. Leave the defaults unchanged for Increment, Numeric Only, and By Value=1. Change the Length to 4, and type in a Start Value of **4058**.

d. Click OK to each of the dialogs to return to the label design form.

3. Double click on the RFID antenna icon. (Alternatively, select and then right click on the RFID antenna icon. From the popup menu, select Edit Data Source.)

4. From the Data Source dialog, select **Block Configuration** and then click on the **Configure** button. This launches the Block Configuration dialog.

   Note: In the previous Loftware RFID versions before 8.3, Loftware programmed the RFID field as one unit and did not consider block composition. Nonetheless, it was designed to produce an EPC that uniquely identified the tagged item. Because block structure was not utilized, most of the settings for the RFID field were selected or assigned from its property box. The RFID field's properties that could be set from its properties box included its Tag Type, its EPC Encoding Type, its Filter Value, etc. In addition, any field needed to pass a value to the RFID field had to have its RFID Link Field property set to 'Yes' and its RFID Link Field Name property set to a field from which the value was derived.

   With this version, user-programmable blocks are accessible.

5. For the EPC block, select **EPC** from the Data Source column. (Leave the Tag Type at UHF 96-bit Class 1.)

6. Click in the Data cell to reveal the ellipsis button. Click on the ellipsis button to access the EPC Configuration dialog.

7. Set the 'EPC Encoding Type' property to **GID-96**.

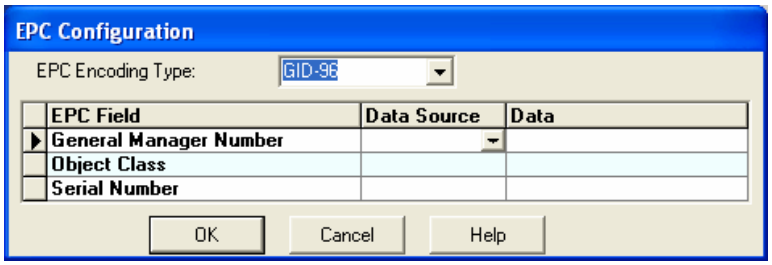

Figure 5-G: Setting values for selected EPC Encoding Type

Refer to the General Identifier (GID-96) section for a description of EPC fields on this dialog.

8. On the grid, set the Data Source for General Manager Number to **Fixed**. Type in your EPCglobal-assigned company or organization number in its Data cell. If you are simply following along, enter **6289**.

9. Select a **Fixed** data source for the Object Class field, and enter **11800** in its Data box.

10. Set the Data Source for Serial Number to **Field**, and select its field name from its Data drop-down list. This is the field created in step 2. If you are simply following along, enter **4058**.

11. Click on **OK** on the EPC Configuration and the Block Configuration dialogs. Note that the Data Source dialog now shows a summary of the configured block.

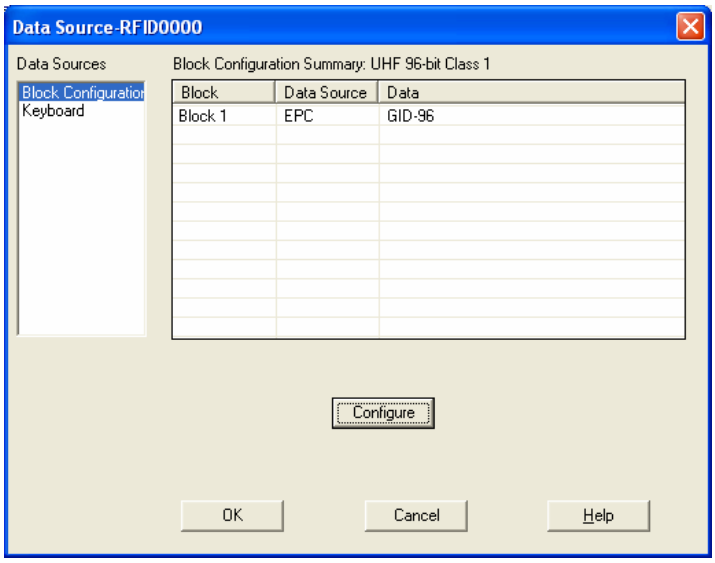

Figure 5-H: Block Configuration Summary

12. Click **OK** to return to the label design area.

You can, if you wish, add other fields to the label, as described in the Designing the New Label section of Chapter 3. Note, however, that for RFID tags, only non-printing variable text and labels can be added.

The sample data above and the encoded result are shown in the following table.

Encoding Type	GID-96
General Manager Number	6289
Object Class	11800
Serial Number	4058
Result	**350001891002E18000000FDA**

Table 5-13: GID-96 encoding result using sample values

Note: For all examples given in this chapter, you can use the Loftware RFID Calculator to help you verify the encoded data. Encoding and decoding examples of using this tool are provided in this chapter.

Global Trade Identification Number (GTIN)

GTINs have traditionally been used to identify products with UCC/EAN barcodes. Because GTINs are encoded in UCC and EAN-13 symbols, their use is far-reaching and understood globally. In general, a GTIN consists of:

- A Company Prefix assigned by the EAN or UCC to a managing entity (a company or an organization)
- An Item Reference assigned by the managing entity to a an object class

The combination of the Company Prefix and the Item Reference is preceded by an 'Indicator Digit' and followed by a 'Check Digit.' These data elements are used as the basis for the SGTIN specification.

GTIN is normally stored as 14 digit numbers and can be derived from data that you probably already have by left padding it with 0's as shown in the following table.

Barcode Symbology	GTIN Structure	GTIN
	UPC-12 (UPC-A)	00614141000449
	EAN/UCC-13	09401234567894

Table 5-14: Calculating GTINs from UCC barcodes

- The leftmost digit is the 'Indicator Digit' which can be changed (by you, the supplier) to denote various packaging levels.
- The rightmost digit is the 'Check Digit' which you may already have or you may have relied on the label printer to calculate. This check digit is dropped during the EPC encoding.
- The middle 12 digits consist of your UCC assigned Company Prefix and the Item Reference Code. The breakpoint between the two varies with the length of your assigned prefix.

Serialized Global Trade Identification Number (SGTIN)

SGTIN is a method of identifying unique items at the unit or retail level as well as at the case and carton levels. As described in the preceding GTIN section, GTIN is composed of a UCC or EAN assigned **Company Prefix** and an **Item Reference**. The **Serial Number**, while not part of the GTIN, is part of SGTIN and assigned to an individual object by the managing entity. The Serialized GTIN (SGTIN) is GTIN combined with a unique serial number.

Where UCC/EAN barcodes have traditionally been used, the SGTIN specification can be used beyond the Item Reference right down to the exact serial number of the item.

If you are already printing UCC/EAN barcodes, most likely you already have the basis for forming a GTIN, especially if you are involved in the Sunrise 2005 Initiative. In addition to the GTINs, you, as the managing entity, will need to assign serial numbers to individual objects. With this

information, Loftware's flexible architecture allows you to create an RFID SGTIN code with relative ease.

There are 3 ways to set an RFID tag or label to create a compliant SGTIN code. Each of these methods is sufficiently different to warrant describing them separately.

1. Calculate SGTIN from existing GTIN and Serial Number data. This scenario for 96 bit labels is demonstrated in Example 3.

2. Calculate SGTIN from existing Company Prefix, Item Reference, and Serial Data. This technique can be used for both 96 and 64 bit tags and is demonstrated in Example 4.

3. Send literal SGTIN data (in hexadecimal format) directly to the field (96 or 64 bit). This is demonstrated in Examples 7 and 8.

SGTIN-96 EPC Field	Description
Filter Value	Not part of the GTIN, as such. Used for pre-selection of basic logistics types, such as items, cases, and pallets
Company Prefix Length	Length of the EAN.UCC Company Prefix. The lengths of the EAN.UCC Company Prefixes assigned to companies vary.
GTIN	GTIN is composed of a UCC / EAN assigned Company Prefix and an Item Reference. Refer to the previous section, Global Trade Identification Number (GTIN) for more information.
Serial Number	A unique number assigned to an individual object by the managing entity (the holder of the Company Prefix).

Table 5-15: EPC Fields for SGTIN-96 EPC Encoding

SGTIN-96 ALT EPC Field	Description
Filter Value	Not part of the GTIN, as such. Used for pre-selection of basic logistics types, such as items, cases, and pallets
Company Prefix	Assigned by the EAN or UCC to a managing entity (a company or an organization)
Item Reference	A number assigned by a managing entity to an object class
Serial Number	A unique number assigned to an individual object by the managing entity (the holder of the Company Prefix).
Indicator Digit	A single digit number that can be used to increase the numbering capacity to identify the packaging level of a product, as in the EAN.UCC-14.

Table 5-16: EPC Fields for SGTIN-96 ALT EPC Encoding

SGTIN-64 EPC Field	Description
Filter Value	Not part of the GTIN, as such. Used for pre-selection of basic logistics types, such as items, cases, and pallets
Company Prefix Index	An index into a table that provides the Company Prefix as well as an indication of the Company Prefix's length. An index is assigned to companies that need to use the 64 bit tags, in addition to their existing EAN.UCC Company Prefixes. The 64-bit company prefix index table can be found at http://www.onsepc.com.
Item Reference	Number assigned by the managing entity (the holder of the Company Prefix) to a an object class
Serial Number	A unique number assigned to an individual object by the managing entity.

Table 5-17: EPC Fields for SGTIN-64 EPC Encoding

Example 3 - 96 Bit SGTIN

In addition to a header, SGTIN-96 is composed of the Filter Value, Company Prefix Length, GTIN (Company Prefix combined with an Item Reference), and Serial Number.

In the example below, the GTIN data is already specified in a UCC barcode. It is a simple matter to combine it with the Serial Number data to obtain the SGTIN.

For an RFID tag, because barcodes cannot be added to it, the data source for the fields will be set in this example to Keyboard, or you can select a Fixed data source from the EPC Configuration dialog and type the values directly into the Data column.

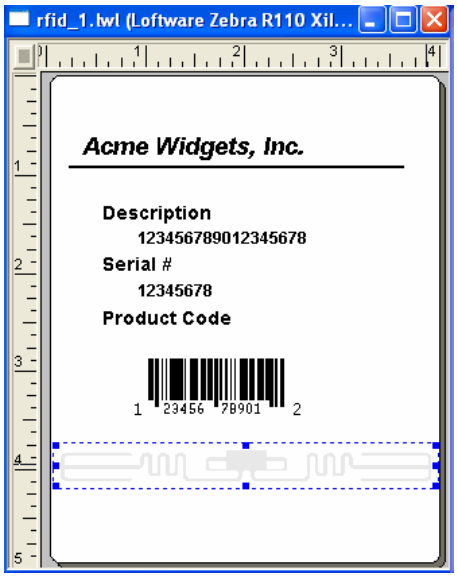

Figure 5-I: A Typical UPC Label with an RFID Field

1. Load (or design) the RFID Smart Label or tag. (Refer to Creating RFID Smart Labels and Creating RFID Tags in this chapter, if needed.)

   a. For this example, add variable text fields that contain values for the **Company Prefix**, **Item Reference**, and **Serial Number**.

   b. For this example, set the length of the Company Prefix value to **6** digits. Set the data sources for each to **Keyboard**.

   c. RFID Smart Label: If you are working with an RFID Smart Label example, add a barcode field to the label. The barcode, which for this example we will call **Barc001**, will contain the GTIN. Set its Data Source to **Formula** that uses the Combine (&) operation to concatenate the Company Prefix and the Item Reference.

      RFID Tag: If you are working with an RFID tag example, only text fields can be added to it. Add a variable text field, which for this example we will call **GTIN_1**, that will contain the GTIN. Set its Data Source to **Keyboard**, the only available Data Source for variable text fields on an RFID tag.

2. Double click on the RFID antenna icon. (Alternatively, select and then right click on the RFID antenna icon. From the popup menu, select Edit Data Source.)

3. From the Data Source dialog, select **Block Configuration**, and then click on the **Configure** button to launch the Block Configuration dialog.

4. Select the **UHF 96-bit Class 1** tag type.

   Note: In the previous Loftware RFID versions before 8.3, Loftware programmed the RFID field as one unit and did not consider block composition. Nonetheless, it was designed to produce an EPC that uniquely identified the tagged item. Because block structure was not

utilized, most of the settings for the RFID field were selected or assigned from its property box. The RFID field's properties that could be set from its properties box included its Tag Type, its EPC Encoding Type, its Filter Value, etc. In addition, any field needed to pass a value to the RFID field had to have its RFID Link Field property set to 'Yes' and its RFID Link Field Name property set to a field from which the value was derived.

User-programmable blocks are now accessible.

5. In the EPC block, select **EPC** from the Data Source column.

6. Click in the Data cell to reveal an ellipsis button . Click on the ellipsis button to access the EPC Configuration dialog.

7. Set the 'EPC Encoding Type' property to **SGTIN-96**.

   Refer to the Serialized Global Trade Identification Number (SGTIN) section for explanation of the EPC fields on this dialog.

8. Set the **Filter Value** to denote packaging level. In this example, select the **Choice** Data Source, and select **3** from the Data drop-down list.

9. The **Company Prefix Length** depends on the length of your UCC-assigned Company Prefix. For purposes of this example, we will select **Choice** for its Data Source, and type in **6** in the Data column.

10. Set the **GTIN** Data Source to **Field**, and select the **Barc001** barcode field on the label or the **GTIN_1** field on the tag from the Data column.

11. Set the **Serial Number** Data Source to **Field**, and select the serial number field.

    The configured grid for the example label may look like the following.

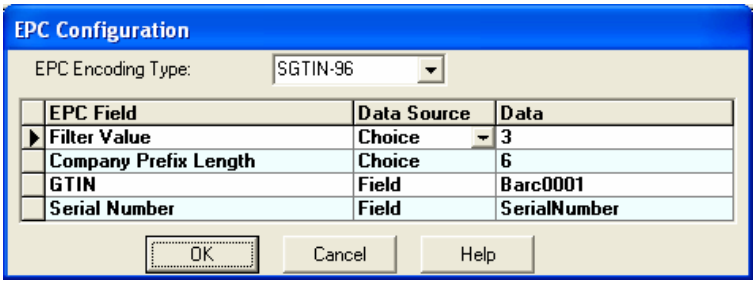

Figure 5-J: Example EPC SGTIN-96 Configuration

12. Click on **OK** to each of the dialogs to return to the label or tag design area. Note that the Data Source dialog now shows a summary of the configured block.

You have just set up your RFID Smart Label or tag to obtain its GTIN and Serial Number from existing fields on the label or tag. For RFID Smart Labels, they could also derive their data from other data sources like a database.

You can, if you wish, add other fields to the label, as described in the Designing the New Label section of Chapter 3. Note, however, that for RFID tags, only non-printing variable text and labels can be added.

- For RFID Smart Labels, instead of supplying the Serial Number, its data source could be set to 'Serial-Number' where the starting number can be pulled from a file.
- For RFID Smart Labels, the barcode in this example could be UPC-A, EAN-8, EAN-13, ITF-14, Code 128, or RSS-14.
- For RFID Smart Labels, the data for this example could be supplied using On-Demand Print. It could just as well come from an LPS .pas file, .xml, .csv, ActiveX Control, .Net Control, WebX Control, or Socket Integration.
- For RFID Smart Labels, the Serial and Barcode fields could be made as invisible data placeholders by setting their 'Printing Field' property to 'No' or by placing the data placeholders in the On-Demand Print Form rather than on the label itself.
- Your label will be different from the one previously shown. You need to apply these concepts to your own situation.
- This example can be extended to use the 'SGTIN-96 ALT' encoding.

Note: For all examples given in this chapter, you can use the Loftware RFID Calculator to help you verify the encoded data. Encoding and decoding examples of using this tool are provided in this chapter.

Example 4 - 64 Bit SGTIN

This is an example of 64 bit tags calculated from Company Prefix Index, Item Reference, and Serial Number. Because of the limited data size, GTIN cannot be embedded in 64-bit SGTIN. Instead, a Company Prefix Index is supplied. The Company Prefix Index table can be found at www.onsepc.com.

Note: This example cannot be used with Class 1 Generation 2 (C1G2) tag types. Generation 2 tags require a 96-bit EPC identifier. Use 96-bit encoding examples with C1G2 tags.

In this example, you must supply a Company Prefix Index. This is assigned to you by the UCC as described in the specifications. This prefix is static and does not change. The Item Reference and Serial Number fields are set to obtain their data from fields that are on the label. Sample data is included if you wish to just follow along with the example.

Rather than creating placeholders for data, you may simply send the appropriate data to the fields using the Keyboard data source. You can also enter the values directly into the Data column after selecting a Fixed data source from the EPC Configuration dialog, and this is also demonstrated in this example.

1. Load (or design) the RFID Smart Label or tag. (Refer to Creating RFID Smart Labels and Creating RFID Tags in this chapter, if needed.)
2. For this example, add variable text fields that contain values for the **Item Reference** and **Serial Number**. Set the data sources for each to **Keyboard**.

You can only add text fields to RFID tags. Data sources for variable text fields on RFID tags are limited to the Keyboard data source.

For RFID Smart Labels, you can add any of the fields on the toolbox (except another RFID field). In addition, variable text fields can obtain data from all available data sources.

3. Double click on the RFID antenna icon. (Alternatively, select and then right click on the RFID antenna icon. From the popup menu, select Edit Data Source.)

4. From the Data Source dialog, select **Block Configuration**, and then click on the **Configure** button to launch the Block Configuration dialog.

5. Select the **UHF 64-bit Class 1** tag type.

   Note: In previous Loftware RFID versions before 8.3, Loftware programmed the RFID field as one unit and did not consider block composition. Nonetheless, it was designed to produce an EPC that uniquely identified the tagged item. Because block structure was not utilized, most of the settings for the RFID field were selected or assigned from its property box. The RFID field's properties that could be set from its properties box included its Tag Type, its EPC Encoding Type, its Filter Value, etc. In addition, any field needed to pass a value to the RFID field had to have its RFID Link Field property set to 'Yes' and its RFID Link Field Name property set to a field from which the value was derived.

   With this version, user-programmable blocks are accessible.

6. For the EPC block, select **EPC** from the Data Source column.

7. Click in the Data cell to reveal the ellipsis button. Click on the ellipsis button to access the EPC Configuration dialog.

8. Set the 'EPC Encoding Type' property to **SGTIN-64**.

   Refer to the Serialized Global Trade Identification Number (SGTIN) section for explanation of the EPC fields on this dialog.

9. Set the **Filter Value** (assigned by you as the supplier) to denote packaging level. In this example, select the **Choice** Data Source, and select **0** from the Data drop-down list.

10. Set the Data Source for **Company Prefix Index** to **Fixed**. You can type in your UCC-assigned Company Prefix Index. If you are simply following the tutorial and do not have a Company Prefix Index number, type in **10301**.

11. Set the Data Source for **Item Reference** to **Field**, and select the item field from the Data column.

    If you did not create an Item Reference variable field in step 2, set the data Source to Fixed, and enter **88845** in the Data column.

12. Set the **Serial Number** Data Source to **Field**, and select the serial number field from the Data column.

    If you did not create a Serial Number variable field in step 2, set the data Source to Fixed, and enter **10029343** in the Data column.

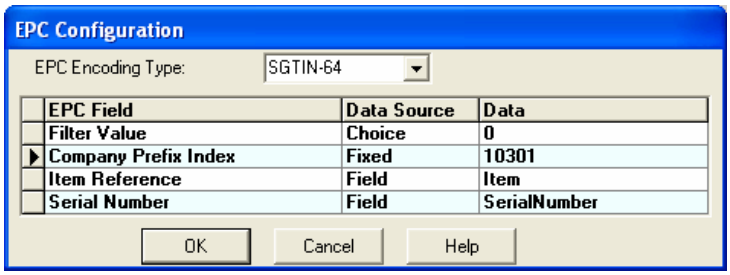

Figure 5-K: Specifying SGTIN-64 Data

13. Click on **OK** to each of the dialogs to return to the label or tag. Note that the Data Source dialog now shows settings summary for the configured block.

You can, if you wish, add other fields to the label, as described in the Designing the New Label section of Chapter 3. Note, however, that for RFID tags, only non-printing variable text and labels can be added. In addition, the data source for variable text fields added to an RFID tag can only come from the keyboard.

The table below shows the RFID tag value calculated from specific supplied values. For RFID Smart Labels, these values can be supplied via the On-Demand Print application, LPS .pas file, .xml, .csv, ActiveX Control, .Net Control, WebX Control, or any Socket Integration method.

With the values used in the example above and shown in the table below, the calculated 64 bit encoding result = ***8507A2B61A99091F.***

Encoding Type	SGTIN-64
Filter Value	0
Company Prefix Index	10301
Item Reference	88845
Serial Number	10029343
Tag Value	**8507A2B61A99091F**

Table 5-18: Tag value derived from specific input

The following LPS pas file syntax demonstrates the equivalent print request using the Loftware Print Server.

```
*FORMAT, rfidLabel_sgtin64.lwl
*JOBNAME, SampleJob002
*QUANTITY, 1
*PRINTERNUMBER, 1
Item, 88845
SerialNumber,10029343
CompanyIndex, 10301
Filter, 0
*PRINTLABEL
```

The following figure shows the printed label (with other added fields). Although you cannot see the data for the RFID tag, it is there and is set to the value shown in the table above (8507A2B61A99091F). Remember, this example uses sample data; you will obtain different results by supplying your own data. Remember also that for RFID tags, text and labels are non-printing fields.

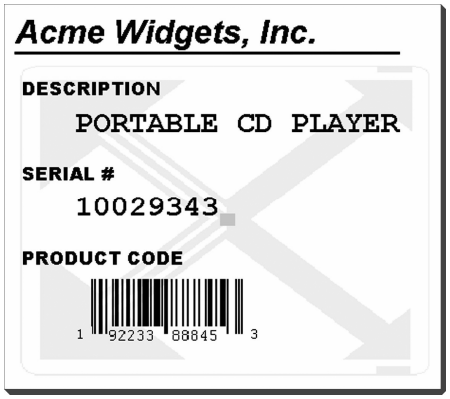

Figure 5-L: Printed label with supplied data

- For RFID Smart Labels, no changes in the data required to originally print this label without the RFID tag were made. You can use your existing method of printing without modification and the EPC encoded data will be correct.
- The Check Digit is not included in the data; the printer automatically calculates it.
- The Company Prefix data cannot be used because 64 bit encoding does not allow for it. This example is for 64 bit tags only.
- Your label will be different. You need to apply these concepts to your own situation.
- The data for the label example can come from the On-Demand Print application, an LPS .pas file, .xml, .csv, ActiveX Control, .Net Control, WebX Control, or Socket Integration.
- You can hard-code the 'Company Prefix Index' into the label as a non-printing field. You could also set its data source to Keyboard. If this is done, 1031 (your actual value will be different) would have to be sent with each label request.
- For RFID tags, the Serial Number and Item Reference fields must be set up to get their data from the Keyboard. The values can also be directly supplied in the configuration grid.

Note: For all examples given in this chapter, you can use the Loftware RFID Calculator to help you verify the encoded data. Encoding and decoding examples of using this tool are provided in this chapter.

Serial Shipping Container Code (SSCC)

The Serial Shipping Container Code is typically used as a 'license plate' for identifying specific information about cartons and pallets. It combines the UCC Company Prefix and a serial reference, along with the Extension digit, to form an 18-digit unique identifier.

If you already have an existing SSCC label, it is a simple matter to convert it to an EPC compliant SSCC RFID Smart Label. The biggest difference between the technique used for encoding SSCC from that used for SGTIN is that in SSCC, the serial number is usually already present. Because of this, all data for the RFID smart label can be automatically extracted from the barcode. This is what makes the following example so simple. Example 5 is very similar to that of Examples 2 and 3 in the SGTIN section.

Barcodes cannot be added to RFID tags. A barcode label cannot be directly converted to an RFID tag.

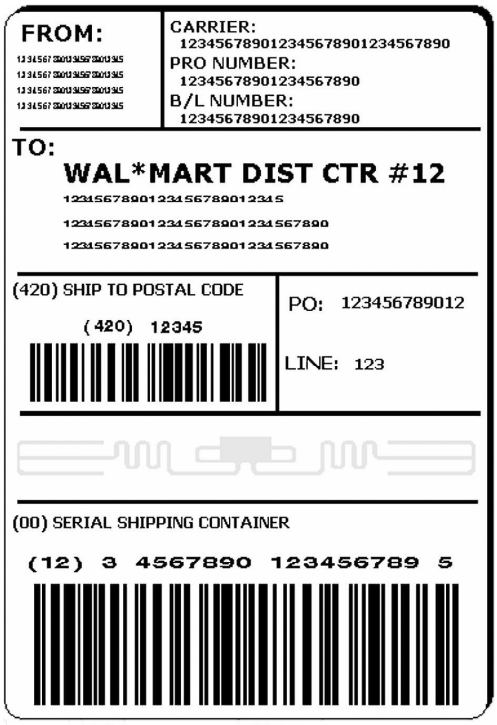

Figure 5-M: Typical SSCC pallet label with a UCC-128 SSCC Barcode

SSCC-96 EPC Field	Description
Filter Value	Used for pre-selection of basic logistics types, such as items, cases, and pallets
Company Prefix Length	Length of the EAN.UCC Company Prefix. The lengths of the EAN.UCC Company Prefixes assigned to companies vary.
SSCC	Unique SSCC number

Table 5-19: EPC Fields for SSCC-96 EPC Encoding

SSCC-96 ALT EPC Field	Description
Filter Value	Used for pre-selection of basic logistics types, such as items, cases, and pallets
Company Prefix	EAN.UCC-assigned Company Prefix
Serial Reference	Number assigned uniquely by the managing entity (the holder of the EAN.UCC Company Prefix) to a specific shipping unit.
Extension Digit	Used to increase the capacity of the Serial Reference number within the SSCC

Table 5-20: EPC Fields for SSCC-96 ALT EPC Encoding

SSCC-64 EPC Field	Description
Filter Value	Used for pre-selection of basic logistics types, such as items, cases, and pallets
Company Prefix Index	An index into a table that provides the Company Prefix as well as an indication of the Company Prefix's length. An index is assigned to companies that need to use the 64 bit tags, in addition to their existing EAN.UCC Company Prefixes.
Serial Reference	Number assigned uniquely by the managing entity (the holder of the EAN.UCC Company Prefix) to a specific shipping unit.

Table 5-21: EPC Fields for SSCC-64 EPC Encoding

Example 5 - 96 bit SSCC

This example uses an existing SSCC label with a UCC-128 barcode field. It demonstrates the ability to have the RFID label automatically derive its data from the barcode field without having to change any of the data that is sent in order to print the label.

If you are using the example to create an RFID tag, note that barcodes cannot be used in RFID tags.

1. Load (or design) the label that you want to use. (Refer to Creating RFID Smart Labels in this chapter, if needed.) This is a label that has a UCC-128 barcode field.

2. Double click on the RFID antenna icon. (Alternatively, select and then right click on the RFID antenna icon. From the popup menu, select Edit Data Source.)

3. From the Data Source dialog, select **Block Configuration** and then click on the **Configure** button. This launches the Block Configuration dialog.

4. Set the Tag Type to **UHF 96 bit Class 1**.

   Note: In the previous Loftware RFID versions before 8.3, Loftware programmed the RFID field as one unit and did not consider block composition. Nonetheless, it was designed to produce an EPC that uniquely identified the tagged item. Because block structure was not utilized, most of the settings for the RFID field were selected or assigned from its property box. The RFID field's properties that could be set from its properties box included its Tag Type, its EPC Encoding Type, its Filter Value, etc. In addition, any field needed to pass a value to the RFID field had to have its RFID Link Field property set to 'Yes' and its RFID Link Field Name property set to a field from which the value was derived.

   With this version, user-programmable blocks are accessible.

5. Set the Data Source for the EPC block to **EPC**. Click on its ellipsis button in the Data column to display the EPC Configuration dialog.

6. Set the EPC Encoding Type to **SSCC-96**.

   Refer to the Serial Shipping Container Code (SSCC) section for a description of the fields on this dialog.

7. For the Filter Value, set the Data Source to **Choice** and its Data value to **4**.

   This value is suggested by Wal-Mart for pallet loads. Check your application or with your customer, as they may require a different value.

8. For the Company Prefix Length, choose the **Choice** Data Source and **7** for its Data value.

9. For the SSCC field, set the data Source to **Field**. For its Data value, select the UCC-128 barcode field.

10. Click **OK** from each of the dialogs to return to the design area.

- This sample is valid for 96 bit RFID Smart Labels containing a UCC-128 SSCC barcode field.

- The Extension Digit, Company Prefix, and Serial number are automatically derived from the data in the barcode field.

- You may use the SSCC-96 ALT encoding if you do not have an SSCC barcode from which to derive the data. The ALT encoding allows you to send your data as Company Prefix, Serial Reference, and Extension Digit. This can be set up in your label similar to Example 6 which follows.

Note: For all examples given in this chapter, you can use the Loftware RFID Calculator to help you verify the encoded data. Encoding and decoding examples of using this tool are provided in this chapter.

Example 6 - 64 bit SSCC Label

If you are using 64 bit labels, the RFID code cannot be derived from the existing barcode because the specification calls for a Company Prefix *Index* as opposed to the actual Company Prefix. This index is supplied to each manufacturer via the UCC/EAN and EPC organizations as a temporary measure until they can comply with the 96 bit mandates.

This means that you will still have to supply the data to the barcode as you normally would and use non printing fields and formulas to derive the Serial Reference and the Company Prefix Index fields. This example is similar to Example 3 in the SGTIN section. This is a bit more complicated to set up than Example 5, but you still do not have to supply any extra data at print time.

If you are creating an RFID tag, note that barcodes cannot be added to it.

SSCC-64 - Concatenates the following bit fields from most significant to least significant: Header, Filter Value, Company Prefix Index, and Serial Reference.

***Note**: This example cannot be used for Class 1 Generation 2 (C1G2) tag types. Generation 2 tags require a 96-bit EPC identifier.*

---

1. Load or create the RFID Smart Label. (Refer to Creating RFID Smart Labels in this chapter, if needed.) This is a label that has a UCC-128 SSCC barcode field from which the SSCC value will be derived. In addition, it has a Serial Number field which, for this example, has the following properties:

   a. Printing Field is set to **No**.

   b. Data Source is set to **Formula** using the Mid-String operation with the SSCC Barcode field, 11, and 9 values. The formula will be similar to 'mid(Barc0001,11,9).' This will automatically grab 9 digits from the barcode starting at position 11. If your serial number is embedded differently, adjust the formula accordingly.

2. Double click on the RFID antenna icon. (Alternatively, select and then right click on the RFID antenna icon. From the popup menu, select Edit Data Source.)

3. From the Data Source dialog, select **Block Configuration**, and click on **Configure**.

4. Set the Tag Type to **UHF 64 bit Class 1**.

   Note: In the previous Loftware RFID versions before 8.3, Loftware programmed the RFID field as one unit and did not consider block composition. Nonetheless, it was designed to produce an EPC that uniquely identified the tagged item. Because block structure was not utilized, most of the settings for the RFID field were selected or assigned from its property box. The RFID field's properties that could be set from its properties box included its Tag Type, its EPC Encoding Type, its Filter Value, etc. In addition, any field needed to pass a value to the RFID field had to have its RFID Link Field property set to 'Yes' and its RFID Link Field Name property set to a field from which the value was derived.

   With this version, user-programmable blocks are accessible.

5. Set the Data Source for the EPC block to **EPC**. Click on its ellipsis button in the Data column to display the EPC Configuration dialog.

6. Set the EPC Encoding Type to **SSCC-64**.

Refer to the Serial Shipping Container Code (SSCC) section for a description of the fields on this dialog.

7. For the Filter Value, select **Choice** for its Data Source and its Data value to **4**.

   This value is suggested by Wal-Mart for pallet loads. Check your application or with your customer, as they may require a different value. At the time of this writing, the filter values are still loosely defined.

8. For the Company Prefix Index, select **Fixed** for its Data Source and its Data value to **14286**. You may substitute your own Company Prefix Index here, if you wish.

9. For the Serial Number, select **Field** for its Data Source and its Data value to the Serial Number field set up in step 1.

10. Click **OK** from the dialogs to return to the design area.

The following table shows the EPC encoding for the sample data provided above. The 64 bit encoding of '***089BE700003AA8E0'*** breaks down into the following constituent EPC components:

Encoding Type	SSCC-64
Company Prefix Index	14286
Serial Number	3844320
Filter Value	4
Tag Value	**089BE700003AA8E0**

Table 5-22: SSCC-64 encoding value derived from specific input

- This example is for 64 bit SSCC labels only.
- You may set the data source for CompanyPrefixIndex and SerialNumber to keyboard and supply the data for these fields at print time.
- Normal UCC-128 data is supplied to the barcode as usual.
- The Company Prefix Index contained in the label is not the same as the Company Prefix contained in the barcode as explained above and in the EPC SSCC 64-bit specifications.
- The Serial Number contained in the label is the same as that in the barcode.
- Assuming that the Serial Number in the barcode increments with each label, the calculated EPC Serial Number automatically increments as well.

Note: For all examples given in this chapter, you can use the Loftware RFID Calculator to help you verify the encoded data. Encoding and decoding examples of using this tool are provided in this chapter.

Serialized Global Location Number (SGLN)

The Global Location Number (GLN) is a EAN/UCC standard for uniquely identifying physical locations (e.g., a building, a warehouse, a room in a building, etc.), legal entities (e.g., a company, a subsidiary within a company, a buyer, etc.), or functional entities (e.g., an accounting department, a ward, etc.). The GLN is a 13-digit number that consists of a UCC assigned Company Prefix, a self-assigned Location Reference, and a check digit. At this time, the 'Serialized' portion of the specification is reserved for future use and should not be used.

The SGLN encodings are very similar to those described for the SGTIN encodings above. You can encode an SGLN by following the SGTIN example 3 and example 4 above. Substitute 'SGLN' for SGTIN' and 'Location Reference' for 'Item Reference.' Remember, 'Serial Number' is not used at this time.

SGLN-96 EPC Field	Description
Filter Value	Not part of the GLN but used for fast filtering and pre-selection of basic location types
Company Prefix Length	Length of the EAN.UCC Company Prefix. The lengths of the EAN.UCC Company Prefixes assigned to companies vary.
GLN	Global Location Number

Table 5-23: EPC Fields for SGLN-96 EPC Encoding

SGLN-96 ALT EPC Field	Description
Filter Value	Not part of the GLN but used for fast filtering and pre-selection of basic location types
Company Prefix	EAN.UCC-assigned Company Prefix.
Location Reference	Number assigned by the holder of the EAN.UCC Company Prefix to uniquely identify a location

Table 5-24: EPC Fields for SGLN-96 ALT EPC Encoding

SGLN-64 EPC Field	Description
Filter Value	Not part of the GLN but used for fast filtering and pre-selection of basic location types
Company Prefix Index	An index into a table that provides the Company Prefix as well as an indication of the Company Prefix's length. An index is assigned to companies that need to use the 64 bit tags, in addition to their existing EAN.UCC Company Prefixes.
Location Reference	Number assigned by the holder of the EAN.UCC Company Prefix to uniquely identify a location

Table 5-25: EPC Fields for SGLN-64 EPC Encoding

Sending Data Directly to the Field

This technique allows you to send the actual hexadecimal encoding directly to the RFID field on your label or tag without the need for special fields or settings. This only works if you have pre-calculated the EPC or DOD codes for all of your products and made them available to your application.

***Note**: This technique works for all types of EPC encoding including GID-96, SGTIN, SSCC, and SGLN, as well as DOD encoding. Essentially, ease of setup is traded for more complex data calculations on the application side.*

Supply Data Directly

1. Select the RFID field on your label or tag.
2. Give your RFID field a descriptive field name using the Field Name property. For example, use RFID_1.
3. Set the data source for the RFID field Data Source to 'Keyboard.'
4. Save your label or tag.
5. Calculate the data value that will be encoded on the RFID label. This must be in hexadecimal format. You can use the Loftware RFID Calculator to obtain the hex value based on your input. (Using this utility program is described later in this chapter.) For example, the following field values for a SGTIN 64:

Company Prefix Index	10032
Item Reference	5051
Serial Number	1000
Filter Value	0

   would result in the hex value **84E60027760003E8**. This is the value that will be encoded on the RFID label or tag. When you print your label using any Loftware printing method, supply the pre-calculated data in hex format as shown in the above example.

Example 7 - 96 bit Sample Data Supplied Directly

Create an LPS pas file that contains the data you wish to send. Your request might look something like the following:

```
*Format, Acme.lwl
*PrinterNumber, 1
Description, PORTABLE CD PLAYER
RFID_Tag, 30183BF980622BC000000C81
*PrintLabel
```

To print the label, follow the instructions for sending a pas file to the LPS and printing it described in the Using the Loftware Print Server section of the Quick Start Guide.

Example 8 - 64 bit Sample Data Supplied Directly

Create an LPS XML file that contains the data you wish to send. Your request might look something like the following:

```
<labels _FORMAT="SGTIN64.lwl" _QUANTITY="1" _PRINTERNUMBER="1">
  <label>
    <variable name="UPCCode">19223388845</variable>
    <variable name="DESCRIPTION">PORTABLE CD PLAYER</variable>
    <variable name="RFID_Tag">8507A2B61A99091F</variable>
  </label>
</labels>
```

```
<labels _FORMAT="DOD64.lwl" _QUANTITY="1" _PRINTERNUMBER="1">
  <label>
    <variable name="DESCRIPTION">PORTABLE CD PLAYER</variable>
    <variable name="RFID_Tag"> CE71133E31FC1C35</variable>
  </label>
</labels>
```

To print the label, you can use any printing method, for example, drop the file to a scan directory as demonstrated with a .pas file in the Using the Loftware Print Server section of the Quick Start Guide.

Using the Loftware RFID Calculator

As you work through the examples given in this chapter, you may want to practice encoding and decoding EPC or DOD data for verification purposes. Loftware provides a utility to help you with this. It can be launched from the Tools menu of Loftware Label Manager. It is a stand-alone application and can also be launched by double clicking on the EPC_Utils.exe file from the Windows Explorer. The RFID Calculator can also encode and decode the EPC as a Uniform Resource Identifier (URI). A clear understanding of the specifications mentioned in the last section is a prerequisite to using this tool. The following examples depict some instances where this utility program may be used as a 'sanity check.'

Example 9 - Decoding the Hex Data

Scenario 1 (Decode) - You are reading a tag. The reader software reports what is programmed into the tag, which is a string of hexadecimal data. The Loftware RFID Calculator can break the data down into its constituent parts based on the encoding type:

1. From the LLM Options menu, select RFID Calculator.
2. Type the hexadecimal value of the tag into the *HEX Value* entry field.
3. Press the *Decode* button.

   The encoding type and the values for each section of data applicable to that type are displayed. Note that in addition to the decoded result, the decoded URI value is also displayed.

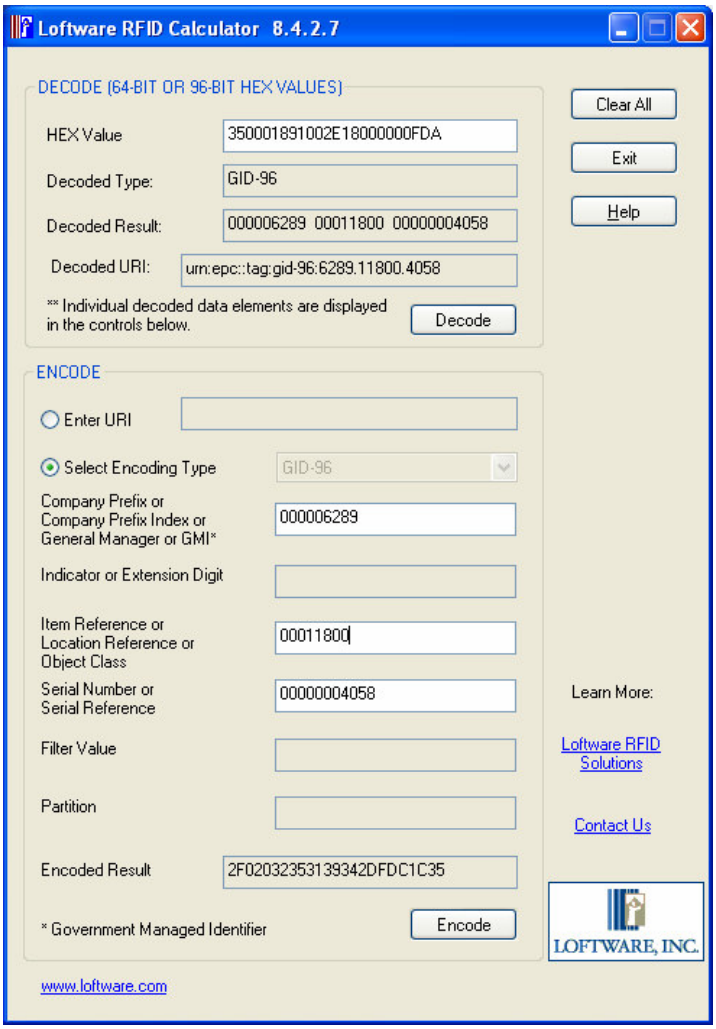

Figure 5-N: Loftware RFID Calculator

Example 10 – Encoding Data

Scenario 2 (Encode) – You have designed an RFID Smart Label or tag as described in the preceding sections. After printing the label or writing to the tag with your data, you want to make sure that the EPC / DOD code in the tag obtained the correct value. Use the bottom section of the utility to enter the encoding type and your data.

The purpose of this example is to verify the values using the Loftware RFID Calculator. In this example, SGTIN-96 ALT encoding was used with the following values:

Encoding Type	SGTIN-96 ALT
Filter Value	3
Company Prefix	614141
Item Reference	527
Serial Number	3201
Indicator Digit	0

Table 5-26: SGTIN-96 ALT encoding sample data

1. From the Options menu, select RFID Calculator.
2. Click on the *Select Encoding Type* check box, and select SGTIN-96 ALT from its drop-down list.
3. Type in the values from the table above.
4. Click on the *Encode* button.

The Encoded Result in hex format is shown: **307A57BF400083C000000C81**.

To obtain the URI value, cut and paste the Encoded Result value into the HEX Value box of the Decode section, and then click on the *Decode* button. Conversely, to encode a URI value, click on the *Enter URI* button, type in the URI, and then click on the *Encode* button.

Printing RFID Smart Labels

Printing an encoded smart label is very similar to printing a regular barcode label. Once you have created your RFID Smart Label and configured the target RFID printer, the smart label can be printed using any Loftware application or development tool. Two of the development tools have the capability of passing the calculated EPC/DOD data back to the front end application. Refer to the Loftware Print Server guide for more information.

Refer to:

- LPS Guide - Overview of Loftware NET Control
- LPS Guide -TCP/IP Socket Interface

Writing to RFID Tags

While you can set up your RFID Tag and its target RFID Reader in LLM design mode, RFID tag writing functionality is only available with Loftware's RFID Reader Module. The Loftware RFID Reader Solutions User's Guide describes this feature.

Chapter 6 International Printing

International Printing - Overview

"Computer technology has significantly enhanced and expedited our ability to communicate ideas. Yet, the computer concept is primarily a Western one. For this reason the union between electronic communications and non-Romanized characters has not been an easy one. Both hardware and software have been based on Romanized characters, the "ABCs," while much of the world communicates in ideograms, Chinese characters and Japanese Kanji, for example, or through scripts such as those of Korean or Arabic."†

Combine the above information with the reality that there is an increasing need to have goods and services delivered in a timely manner to all corners of the globe, today's businesses need to have the ability to print labels in many natural languages easily and quickly. Loftware has created this ability, from prompting operators in their natural language, to printing in both single and double byte character sets, and utilizing Unicode.

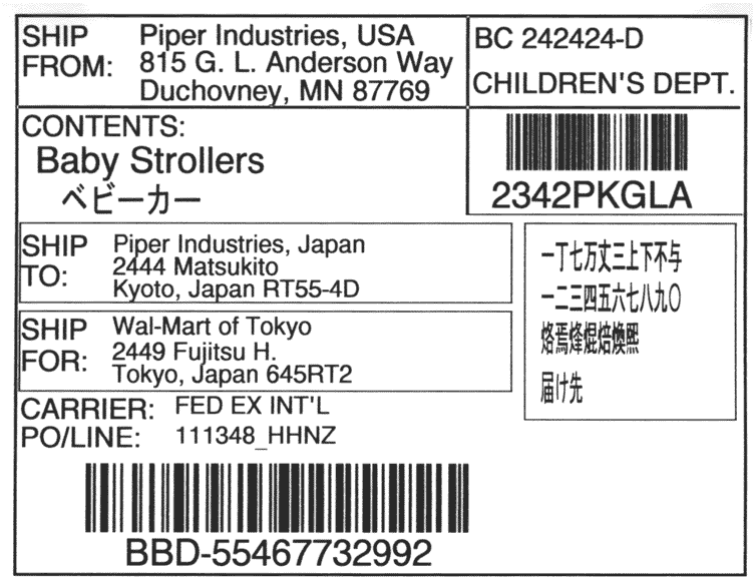

Figure 6-A: Label displaying a double-byte Japanese Character Set

† From www.dynalab.com

Loftware Support for Single and Double Byte Fonts

While Loftware has always supported the printing of single byte fonts on a "per-printer" basis, that feature was expanded to a "per-label" basis in the Label Options Dialog Box in Loftware Version 6.0. This allows you to print labels in different languages to the same printer. In terms of double byte fonts, (see definitions below) Loftware supports international fonts native to the various Printer Families that are able to support this, as well as support for sending a bitmap of the font to the printer when the printer does not support double-byte characters. While the latter method is slower, it does get the job done where these fonts are needed. Again, this can be done on a per printer, per label, and beginning in version 7.0, even a "per field" basis. This means that different Asian (double-byte) fonts can be printed on the same label! A section describing in detail the per printer, per label and per field concepts follows.

We have taken a lot of the hard work of International printing and made it simple. While no keyboard entry of Unicode or Double byte fonts is supported, you can connect Loftware to a Unicode database field or pass the data through one of the following:

- .pas file
- .csv file
- .xml file
- Loftware's ActiveX Client Control

More information on how to do this follows.

Definitions

To begin to understand International Printing, please read the following terms if you are not familiar with them:

ANSI Code Pages – "ANSI code page" is a generic term used in Windows to describe a collection of code pages used for character encoding in graphical Win32 applications and fonts.

ASCII Characters – ASCII is a code for representing English characters as numbers, with each letter assigned a number from 0 to 127. For example, the ASCII code for uppercase *M* is 77. Most computers use ASCII codes to represent text, which makes it possible to transfer data from one computer to another.

Big Endian - Refers to which bytes are most significant in multi-byte data types. In Big-Endian architectures, the leftmost bytes (those with a lower address) are most significant. Swapping integer data between computers of different types (see Little Endian) is a difficult problem unless you convert the information into ASCII characters. Many mainframe computers use a Big-Endian architecture.

CJK - A collective term referring to the common features of Chinese, Japanese, and Korean writing systems.

Character Set – A character set is only a collection of characters. Characters from different language systems are conventionally divided into different "character sets." For example, a font for use in Russia includes glyphs representing the Cyrillic character set.

Code Pages - A code page, or character set, defines a collection of characters, numbers, punctuation, symbols, and special characters for a particular language. Using a process called encoding, each character in the code page is assigned a numeric value called a code point.

Computer hardware, software, and operating systems can then exchange information for a particular language or for a collection of languages using these code points.

DBCS – Stands for "Double byte Character Set." DBCS pages may be a mixture of single byte and double byte characters.

Double byte – 'Double byte' is usually used in reference to a character set which supports more than 256 *characters*. Consisting of 16 bits, two bytes (or octets) can support numbers ranging from 0 (zero) to 65,535, i.e. 65,536 unique numeric values.

Glyph – A glyph is a representation of a character. The character "Capital Letter A" is represented by the glyph "**A**" in Tempus Sans ITC Bold. A *font* is a collection of glyphs.

Little Endian - Refers to which bytes are most significant in multi-byte data types. In Little-Endian architectures, the rightmost bytes are most significant. Swapping integer data between computers of different types (see Big Endian) is a difficult problem unless you convert the information into ASCII characters. Most modern computers, including PCs, use the Little-Endian system.

Natural Language – A natural language is a term to describe the various human languages spoken on the planet.

OEM Code Pages - The term OEM code page refers to code pages used in MS-DOS that have built-in hardware support to allow rapid display of characters on the computer console. The first 128 characters in OEM code pages are defined by the ASCII standard.

Octet - Also known as a byte, an octet consists of 8 bits, and can represent numeric values ranging from 0 (zero) to 255.

Ram – Pronounced *ramm*, acronym for ***r****andom* ***a****ccess* ***m****emory*, a type of computer memory that can be accessed randomly; that is, any byte of memory can be accessed without touching the preceding bytes. RAM is the most common type of memory found in computers.

Rom - Pronounced *rahm*, acronym for ***r****ead-****o****nly* ***m****emory*, computer memory on which data has been prerecorded. Unlike main memory (RAM), ROM retains its contents even when the computer is turned off. Fonts are often stored in ROMs.

Simplified Chinese - The Chinese ideographic writing system as used in the People's Republic of China and Singapore.

Single byte – 'Single byte' is usually used in reference to a character set, which supports a maximum of 256 characters. Consisting of 8 bits, one byte (or octet) can support numbers ranging from 0 (zero) to 255, i.e. 256 unique numeric values.

Symbol Set – a set of glyphs.

TrueType format - Originally devised by Apple Computers and later extended by Microsoft, TrueType is a font format, which can support a large number (max 65,536) of characters.

Unicode - A standard for representing characters as integers. There are seven character encoding schemes in Unicode: UTF-8, UTF-16, UTF-16BE, UTF-16LE, UTF-32, UTF-32BE and UTF-32LE. UTF-16, for example, uses 16 bits per character, which means that it can represent more than 65,000 unique characters. This number has become necessary for some languages, such as Greek, Chinese and Japanese. Many analysts believe that as the software industry becomes increasingly global, Unicode may eventually replace ASCII (which uses 8 bits for each character) as the standard character coding format.

Common TrueType Double-byte Character Sets

Chinese Big 5 - Traditional Chinese used in Taiwan and Hong Kong

GB 2312 - Encoding standard for Simplified Chinese, used in the People's Republic of China and in Singapore. (Similar to GBK)

Hangul - The syllabary (or, syllabic alphabet) used to write the Korean language

Shift JIS - Common Japanese character set consisting of around 7000 characters, which also includes a single byte set and is able to interpret ASCII hex codes correctly

Common Native Double-byte Character Sets

Big 5 – Traditional Chinese used in Taiwan and Hong Kong.

GBK – Encoding standard for Simplified Chinese, used in the People's Republic of China and in Singapore.

Hangul - The syllabary (or, syllabic alphabet) used to write the Korean language.

JIS - Common Japanese character set consisting of around 7000 characters.

Shift JIS - Common Japanese character set consisting of around 7000 characters, which also includes a single byte set and is able to interpret ASCII hex codes correctly.

Unicode - is an international standard for representing a broader character set using a two-byte encoding for each letter. This allows the encoding of 65,536 characters in a single font instead of 256: essentially all the characters for every language in the world, each with a unique ID.

Links to Font-Related and Language-Related Web sites

These sites are only listed to provide you with some additional resources for information:

alanwood.net/unicode/fonts.html	This links to a description of known Unicode fonts. There is a lot of Unicode-related information on this site.
microsoft.com/globaldev/reference	Microsoft Windows code pages, which have both SBCS and DBCS code pages.
hermessoft.com/	Hermes Software - Bulgarian font software co.
microsoft.com/typography/unicode/cscp.htm	A primer on Character Sets and Code Pages.
msdn.microsoft.com/library/default.asp	Information on Double-byte Character sets in Windows.

Printing Hierarchy with Character Sets

The printing of both double byte and single byte characters in Loftware can take place on a "per-printer", "per label", or a "per field" basis. What do we mean when we say "per-field", "per-label", "per printer"? It is important you understand this terminology, and the hierarchy in which label printing takes place. The order of precedence in which labels are printed is described below.

Per-Printer – When you configure a printer in LLM Design Mode, if you set a particular Character Set in Printer Options (**F6**; or **File | Printers**), and print the label, the label is printed "per-printer", meaning that all labels printed with this printer use this character set.

Per-Label – If you change the Character Set in *Label Options*, this overrides the printer's (per-printer) setting for the Character Set, and the label is printed "per-label", for this label ONLY.

Per-Field – If you open a label, click on a field, and use the Language Properties Wizard, you can override the double-byte character set in BOTH Printer and Label Options for that field only; make sure the "Override" box is checked. Or, if printing a TrueType Font sent as a bitmap, this bitmap is basically set "per field" as any other bitmap would be. See the instructions later in this chapter for the Language Properties Wizard.

Hierarchy Example

The printing hierarchy example we are going to look at is with a Zebra 170xiIII printer. You can test any printer by completing the following.

Part 1 - Look at the Printer Options (LLM Printer Configuration > "Options" button). The default Character Set is *USA 1*,and the default DB (Double-byte) Character Set is *Unicode*, as seen in the following figure: Changes to the Character Set here are "per printer."

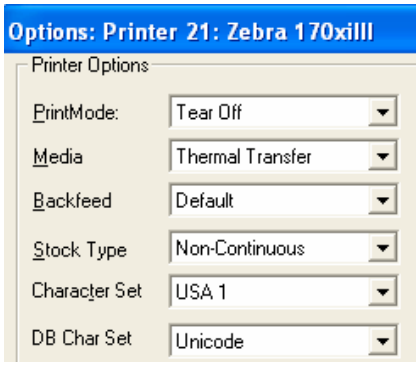

Figure 6-B: Character Set settings in Printer Options (Per-printer)

Part 2 – When the label options for this printer are opened, the following defaults for Character Sets (single and double-byte) are displayed:

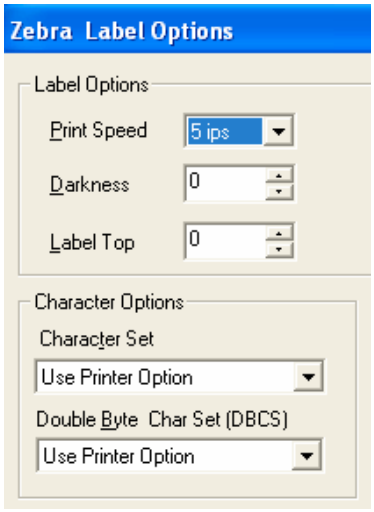

Figure 6-C: Character Set defaults in Label Options

As you can see from the figure above, the default Label Options (in this particular printer) for both double and single character sets are set to *Use Printer Option*. This means that the Character Set seen in Printer Options is used when printing the label. If you wanted to change this default character set, "per label", meaning for this label only, click on the drop-down list and select a different character set. (The choices vary for each family of printers.)

Click **OK**, and the character set is changed, thus overriding the Printer Option, for this label ONLY.

Part 3 – To override both the Printer and Label Options Character Set, and set these options "per field", follow the instructions set forth in the Language Properties Wizard section of this chapter.

Single Byte Fonts

Single-byte Character fonts are the standard fonts that Loftware has always supported. The fonts cover a wide range of languages, including those of Western Europe and the Middle East. Most languages outside of the Asian Continent are mapped through single-byte fonts.

Default Single byte Character Set

The default single byte character set has always been available on a per-printer basis, as displayed below:

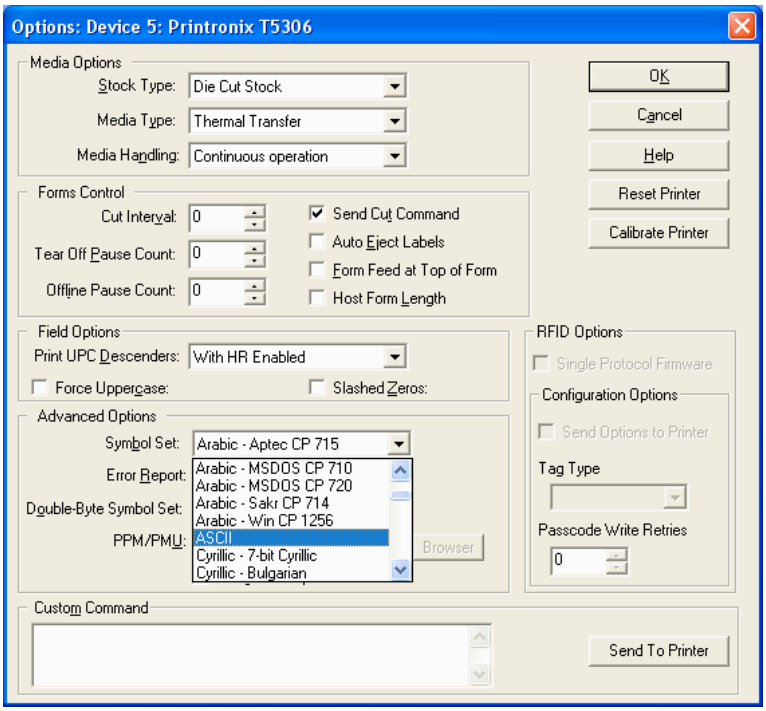

Figure 6-D: Character Set in Printer Options Dialog Box

When chosen in the Printer Options Dialog Box, this sets the Character Set, Symbol Set, or Language (these are synonymous terms depending on the Printer Family to which you are printing) for any labels that are printed to that Printer. The method described in the following section outlines how to create an Operator Input Prompt in a foreign language.

The single byte characters are also available on a *per label* basis through **Media Setup/Label Options** in Design Mode. This presents a great time-saver to companies wishing to send labels to the same printer, but print them in a variety of languages. An example of per-label printing of foreign characters follows the next section.

Prompting in Foreign Languages

Creating an Input Prompt in a foreign language allows the operator to add the required information quickly and accurately, as the prompt for each field is displayed in their natural language. The figure below is an example of a customized On-Demand Print Form displaying the operator inputs in Spanish, while the actual data fields the operator has entered are in English.

Note: These instructions are for single byte fonts only.

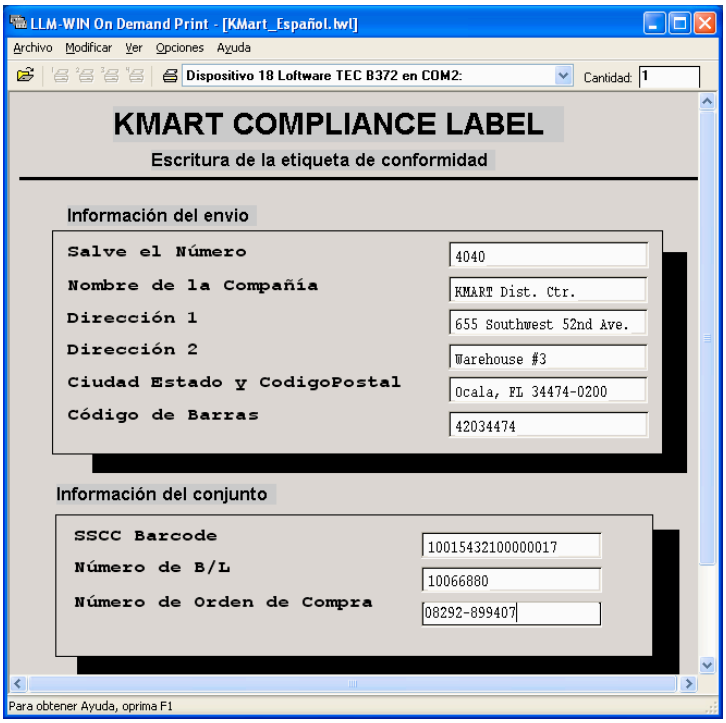

Figure 6-E: Sample K-Mart Compliance Label with Operator Input in Spanish.

Loftware has developed some sample templates and labels that have operator input prompts and/or field names in French, German and Spanish. These may be found on the Loftware website, **www.loftware.com** under the Support Section, or on your Loftware CD. The following section shows you how to add input prompts in a foreign language.

Note: Creating an Operator Prompt with international character sets is NOT the same as printing labels with international character sets. More information on printing these labels follows.

Creating International Input Prompts in LLM ODP

In Loftware Label Manager, open a label in Design Mode, or create a new label in Design.

Open the Operator Input Screen (On-Demand Print Form) by clicking on the "switch" icon  . If you are not familiar with this screen and its capabilities, please read about this screen in Chapters 3 and 9.

The On-Demand Print Form and its accompanying Properties box are displayed. For the following example, the Properties box is used to change the Input Prompt for the 3rd line, top section "**Company Name**" field to the Spanish equivalent, which is "**Nombré de la Compañía**." (See figure above.)

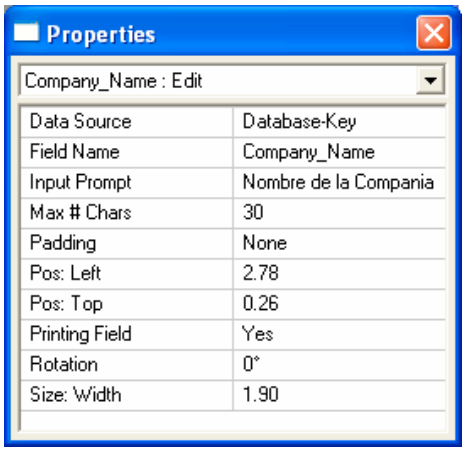

Figure 6-F: Properties Box with Spanish Input prompt for the operator

To create foreign characters in the Properties Box, complete the following:

Creating Foreign Characters:

1. Highlight the **Input Prompt** field
2. Type in **N o m b r**, then, while holding down the **Alt** key:
3. Type **130** on the numeric keypad, let go of the **Alt** key, the character **é** is displayed.

Note: Numerals must be entered by using the numeric keypad and with NumLock on.

4. Continue typing as in the previous steps, and when an international character is needed, add it in the same manner. (See the table below.)

Some of the more commonly used characters are:

Letter		Letter		Letter	
é	ALT 130	ë	ALT 137	ê	ALT 136
á	ALT 160	ä	ALT 132	â	ALT 131
í	ALT 161	ï	ALT 139	î	ALT 140
ó	ALT 162	ö	ALT 148	ò	ALT 149
ú	ALT 163	ü	ALT 129	û	ALT 150
ñ	ALT 164	Ñ	ALT 165	à	ALT 133

A more complete extended ASCII table is found in Appendix C. You may have to try different fonts to get the desired result.

It is important to understand that prompting the operator is not the same thing as printing labels using international characters. Prompting is what you see on the screen that facilitates data entry, while printing what you see on a label to a printer is a much more complicated endeavor.

Printing Encoded Data, Per-Printer Method

With bar code label applications traversing all industry segments and becoming more internationalized, there are increased requirements for printing characters that fall outside of the traditional American English alphabet character sets. While getting the Operator Input Prompt written in a foreign language is relatively easy, getting labels **printed** using international characters is a different and sometimes complex matter. Three examples of possible printing methods follow. These examples were created using typical Native printer fonts, and are intended to give you a cursory understanding of this subject. Keep in mind that if you are using a special TrueType font, such as Wingdings or a Native OCR type font, the results you get are guaranteed to NOT be what you are looking for.

In your day-to-day operation, it is not feasible to have your input operator look up characters in tables and convert them. Creating a database that utilizes these characters is time saving; an example of how to do this follows:

Note: *The following examples assume the use of the U.S. English Version of Windows, as well as a U.S. English Keyboard.*

Method #1: Using the IBM Extended ASCII Chart

The following example uses the ASCII Extended Chart found in Appendix C. Most of the foreign characters you may want to use are located on this chart, and they work as displayed with most of the popular Native Fonts.

1. Create a database using any database utility. (The database below is a sample included on the CD.)

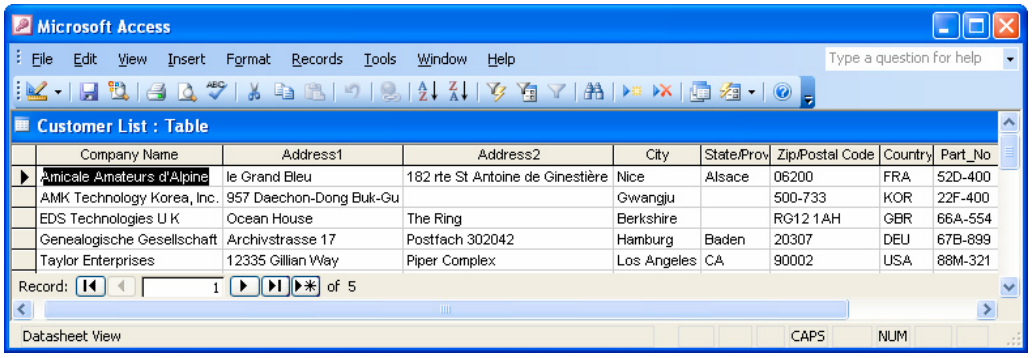

Figure 6-G: Sample Microsoft Access© Database

2. Enter international characters by following the steps from the previous section, and the Extended IBM ASCII Chart. (See Appendix C for the extended chart.)

3. Connect the database to the fields on your label, and save the label.

4. See the Data Sources chapter in this User's Guide if you are not sure how to do this.

5. Click on the ODP icon, and use the browse feature to choose the data you want to print. See "Filtering and Browsing a Database" for a more detailed description of browsing.

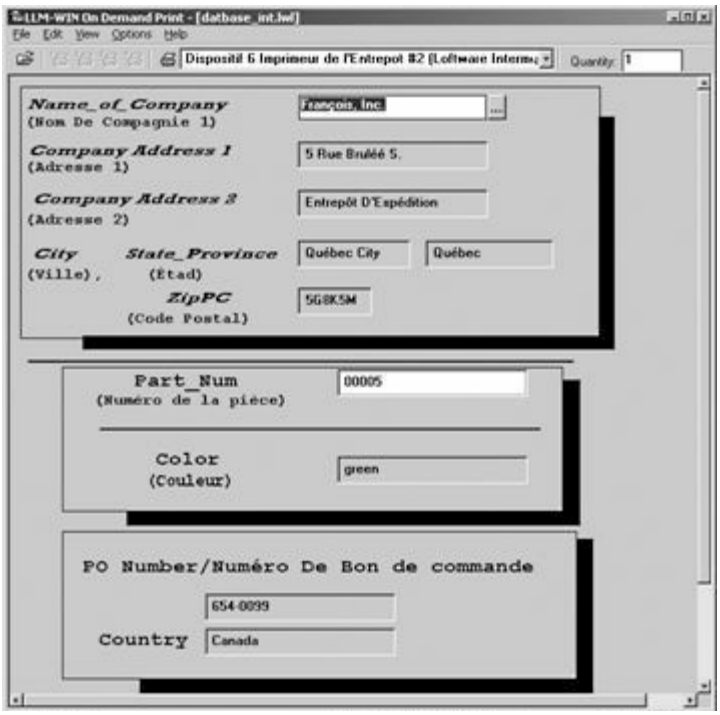

Figure 6-H: Sample ODP Using a Database Containing International Characters

6. Print the label using the print icon, or **File > Print** from the Menu Bar.

Method #2: Using a specific Printer's International Character Set

If the Extended ASCII Chart does not have a specific character that you want to print, you may be able to find it by utilizing an International Character Set chart for a particular Printer Family and Printer Model, such as the one displayed in the following table. To understand how to use Loftware's foreign language settings combined with a printer's International Character Set, please investigate your printer's manual thoroughly first. Using one of the tables, find the character that you want to use.

Example: A label is created for an Intermec Easy Coder 4400 in which the character "**ç**" is to be used (as in the term "**Français**"). This character is not found on an U.S. ASCII Keyboard, but it can be added in the following manner, as can other printers with similar options:

1. Open the label in Design View, or create a new label
2. Open **File/Printers**, or **F6**.
3. Highlight the line that contains the Intermec Printer**.** (in our case, Printer 9).
4. Click on **Options**.

The options for the Intermec Printer are displayed:

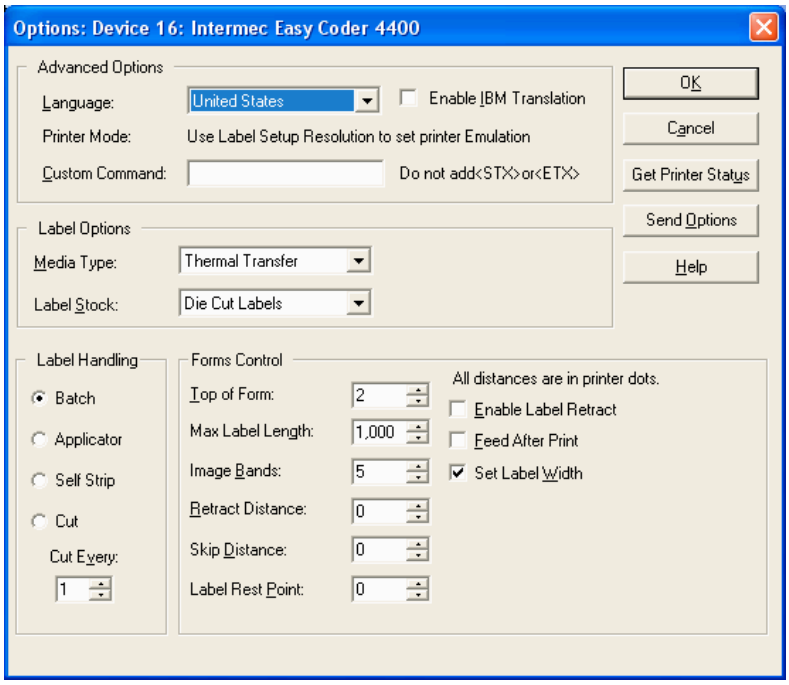

Figure 6-I: Intermec Printer Options

1. Choose **France** from the drop-down list next to **Language** in the Advanced Options section.
2. Save the label, enter a fixed or variable text field, type in:

   `Fran\ais`

3. Print the label. The character **"\"** is displayed as **"ç"**, thus adding the desired character.

A portion of the advanced character table from an Intermec Manual is displayed below to visualize what has transpired between Loftware and the Intermec printer, i.e.; the conversion of characters from one character set to another. The top row contains various characters in the (Extended) U.S. ASCII character set, while the fourth row contains the French counterpart, or what is displayed upon completion of the first example. (Table is read vertically). On a U.S. keyboard, type the character in the top row, and the corresponding character in the selected character set is printed.

Intermec Advanced Character Table for Intermec Easy Coder 4400

U.S. ASCII	#	$	**@**	[	\	]	^	`	{	|	}	~
U.K. ASCII	£	$	@	[	\	]	^	`	{	|	}	¯
Germany	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
France	£	$	**à**	º	**ç**	§	^	`	é	ù	è	¨
Norway/Denmark	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	¯
Sweden/Finland	#	Ì	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
Spain	£	$	§	¡	Ñ	¿	^	`	º	ñ	ç	~
Switzerland	#	$	à	º	ç	é	^	ù	ä	ö	ü	è
Italy	£	$	§	º	ç	é	^	ù	à	ò	è	ì

Please note that what you see on your **screen** in Loftware Design Mode or On-Demand Print is the "\" character, and what is printed (when Language is set to France) is the "**ç**".

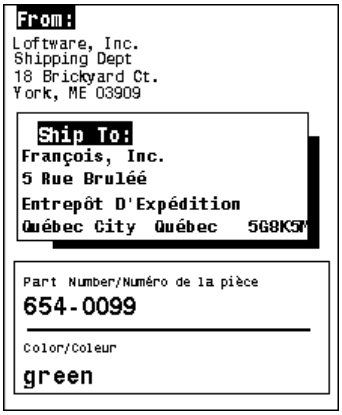

Figure 6-J: Label Displaying Foreign Characters

Method #3: A Combination Method Using 2 Sets of Charts

Continuing printing scenarios, you could use a combination of Methods #1 and #2. First, enter all the characters you are able to using the IBM ASCII Chart. Then use the second method to enter a different character. However, be aware that you may have problems when combining the two methods.

For example, if the same label is slightly altered, i.e., the second line in the "From:" section is changed to read "shipping@loftware.com". When this line is printed using the Intermec Printer's Advanced Character Table and language in the Loftware's **Printers/Printer Setup/Language** section set to "France", the symbol **@** is changed to **à**. (See the previous chart to understand this conversion).

Windows Printers and Laser Jets - Foreign Language options in Printer Setup are not available when using Windows Printers or LaserJets. Since they use TrueType fonts, the IBM ASCII Chart

can be used as an option to add characters, as well as inserting the symbols that are available through various fonts. Each font uses a different Char Map.

Note: *This same method may also be used for .pas files with the Loftware Print Server.*

Printing Encoded (Single byte) Data, Per-Label Method

When would you use the Per-Label Method?

Suppose you are designing a label that you would like to be able to send to several different countries, and you would like to use the same printer for this label. With the "Per-Label" method, you can design the label as a template, and then configure the label in different languages, changing the Character Set for each label to meet the language requirements.

The methods used in this section are quite similar to those used in the Per-Printer section, with some minor differences, as listed below:

1. Create a label in Loftware Design Mode. (See Chapter 3 for information on creating labels.)
2. Click **F5**, or **File > Media Setup**, then the **Label Options** tab.
3. Choose the language in which you wish to print under the "*Symbol Set*" list in the Label Overrides Section.

Using either method, the options are sent to the printer for the label being printed. However, when setting the single byte character set, a check is made to see if a setting in Label Options has been made, and if it has, this setting overrides any value set in the Printer Options.

Getting Character Sets and Fonts (Language Packs)

What are Character Sets? Character sets are collections of characters that include the different glyphs that make up a particular natural (human) language. While the English Character Set has about 200+ glyphs associated with it, natural languages such as Japanese have thousands! So, a Character Set is a "human language."

Is a Character Set the same as a Font? **No**. A Character Set may include several fonts, for example the Asian Character Set **Chinese Big 5** has at least four fonts.

In order to print a certain character set, you need to have it on your PC. Most character sets have certain fonts associated with them, as well. In order to print these fonts, you ***must*** have this font on your Operating System. To get the appropriate character set and font, complete the following:

WINNT, 2000, XP, 2003

Note*: You must have your Windows CD in the Computer!!!*

1. Start > Settings > Control Panel > Regional and Language Options
2. Under the Languages tab, click on Details. Use the Add button to add the input languages you need.
3. Click OK.

4. Reboot your computer to enable the new language settings.

Note: *Most of the double-byte character set files have fonts with them. If you install a character set, but you have no font on your system to support it, you have to get the appropriate font. Most fonts are readily found on the internet.*

Enabling a Right-to-Left or Complex Script

When attempting to print in a language that is read and printed right to left, such as Arabic, there are certain files and settings that must be added and/or enabled. Have your OS CD available before starting the following steps. These files are found and enabled using the operating system CD.

Windows 2000

1. Start > Settings > Regional Options
2. Enable check box for the desired language.
3. Press the Apply button.

Windows XP/2003

1. Start > Settings > Control Panel > Language and Regional Options
2. Click on the Languages Tab.
3. Check the box Install files for complex script…
4. Press Apply and OK.

Language Properties Wizard

The Language Properties Wizard facilitates the creation of both single and double-byte fonts for printing. It allows you to choose a language, font category (Native or TrueType), and a font character on a **per-field** basis. An earlier section discussed "Printing Hierarchy" on a Per Printer and Per Label basis. Multiple language fields can be printed on the same label using the wizard. The figure below displays an example warning label with a warning printed in 8 languages, including 3 double-byte character sets. This label is attached to a database that contains the translated text. The advantage of the Language Properties Wizard is that one or several fields on the label may override the Device or Label Options, making it one of the most versatile printing tools Loftware has ever created. Information on double-byte fonts is found in a following section, and a flow chart of the Language Properties Wizard is found in Appendix C.

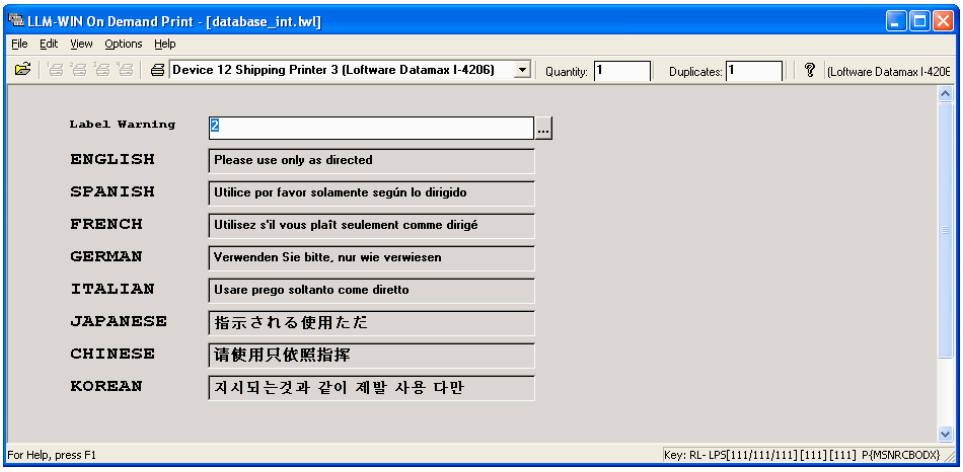

Figure 6-K: On-Demand Print view of a sample label with 8 different character sets attached

Starting the Language Properties Wizard

1. Open a previously designed label, or create a new label in Loftware Design Mode.
2. Click on a field on the label to display the Properties Box for that field.
3. Click anywhere on the **Language Properties** line in the Properties Box to enable the ellipses, then click on the ellipses.

Figure 6-L: Language Properties Wizard Welcome

4. From the Welcome dialog of the Language Properties Wizard, click Next. This displays the Font Language Selection dialog.

5. From the Font Language Selection dialog, choose the language you wish to print: **Non-Asian** (Single Byte) or **Asian** (Double Byte). Click **Next**.

Note: *Single-byte Character Sets such as Thai and Vietnamese are included in the Non-Asian Section rather than with the Double-byte Character Sets such as Japanese, Korean, and Chinese.*

Asian and Non-Asian Language Choices

Choosing the language that you wish to print is a straightforward one, however, the ramifications of each choice are different. The next sections discuss this in detail, beginning with Asian Languages/Fonts.

Asian (Double-Byte) Language Choice

With this choice, one of two dialogs is displayed, depending on whether or not the target printer is capable of printing Asian (double-byte) fonts natively.

- If your printer **is** capable of printing double-byte fonts natively, the following is displayed. (Please note that you still may choose to print the double-byte font as a bitmap by clicking TrueType Font.)

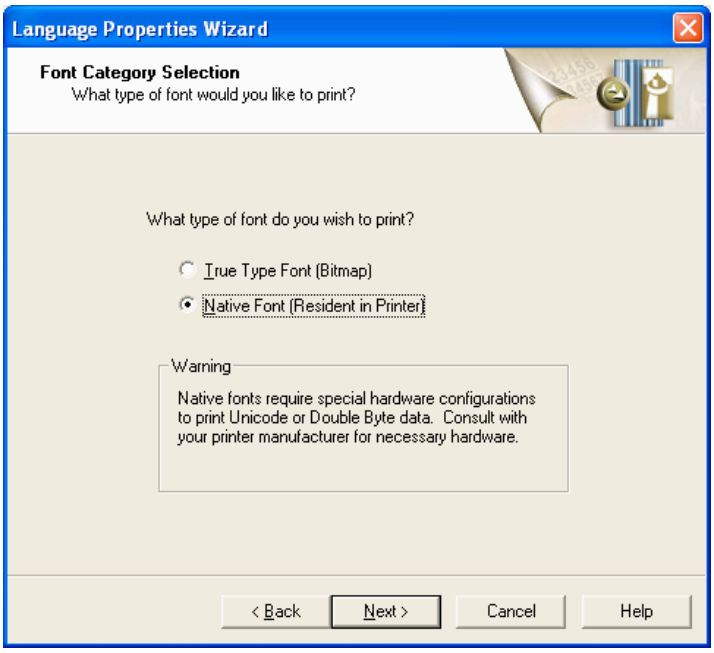

Figure 6-M: Choosing a Native or True-Type Font

Choose Native or True Type, and press **Next**.

Pros and Cons of Native and TrueType Choice

Native Fonts	TrueType Fonts
Can be very complicated to implement, with many variables involved.	Much less complicated, quicker and easier to set up.
Choice of font types is limited.	Greater choice of fonts, much more varied in terms of types.
Hardware considerations and configurations necessary.	No hardware considerations or configurations necessary.
Consultation with Printer Manufacturer and Manual involved.	Little if no consultation with Printer Manufacturer or Manual
Printing is faster.	Printing is slower, as True Type Fonts are sent as bitmaps to printer.

- If your printer is not capable of printing the double-byte font natively, the following is displayed:

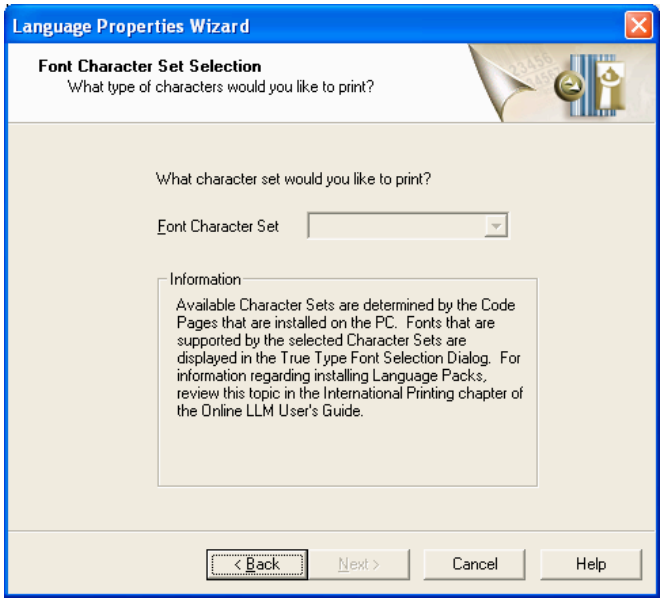

Figure 6-N: Font Character Set

If the above dialog is displayed, this font (character set) is printed as a True Type font bitmap. Follow the instructions in the “Printing with True Type Fonts” section found later in this chapter.

Printing with Native DBCS Printer Fonts

Remember, the following dialog box is *only* displayed if Asian Language is chosen, *and* your target printer is capable of printing double-byte fonts; otherwise, Loftware defaults to TrueType Fonts. (Loftware queries the target printer's driver to determine the capability of the driver)

If you chose Native Font in the Font Category dialog box, the following dialog is displayed:

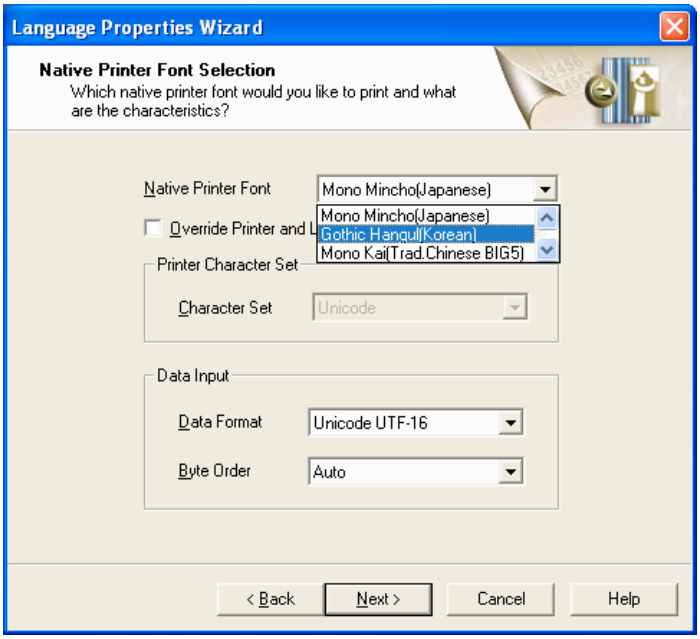

Figure 6-O: Native Printer Font Selection

Native Font Printer Selection

Native Printer Font - Choose the type of Native Printer font you want to print. The fonts available in the drop-down list are dependent on the target printer you have chosen.

Printer Character Set Section
Override Printer and Label Character Sets at Field Level - Check the box to set the Language Properties for this field as "per field", which overrides any Printer and Label Character Sets. (See the Printing Hierarchy section in this chapter for more information on the "per field" concept.

Character Set – This drop-down list enables the user to change the printer character set at the field level, overriding any setting in the PSO or LSO (Printer or Label Options). This list is only enabled when the Override Box is checked. This option only works if your printer supports different character set encodings for any particular DBCS font. For example, Datamax and Zebra printers can accept Shift JIS, JIS, or Unicode Data for their Japanese Fonts. However, Sato, UBI, and Printronix can only accept one type of data for any of their fonts, meaning that the font chosen implies the data encoding.

Data Input for Unicode Character Set Section – This section sets the data format and byte order. This gives information on how the data is coming to Loftware, i.e., what form it is in.

Data Format – This is the format that you wish to use to send data for the field.

Single Byte – In this case, Loftware does not transform the data format, the code page for that character set is used.

Unicode UTF-16 - Choose this newer data format if your data is represented in this manner, especially if linking to a Unicode field in a database
(See definition earlier in the chapter)

Unicode UTF-8 - 8-bit transformation - use this setting if your data format is set to UTF-8 encoded Unicode. (See definition earlier in the chapter.)

Byte Order - The byte order by default is **Auto**. When set as Auto, Loftware looks for a marker before the data, and interprets the data as Big or Little Endian according to the marker. If you know the specific byte order, you may set this manually as Big Endian or Little Endian. If you are not sure, leave this setting at the default (Auto), except in the case of database data files, in which case you *must* specify Big or Little Endian. See the definitions at the beginning of the chapter for information on Big and Little Endian.

Warning Section – This section displays additional information pertinent to the Unicode Data Format.

1. Choose the **Native Printer Font** from the drop-down list.
2. Check **Override Printer and Label Character Sets at Field Level** if you want to select a specific Printer Character Set for this field. Remember, if the Override box is *not* checked, the Printer Character Set box remains grayed out (disabled).
3. Choose the Data Format and Byte order (described in the previous section), press **Next >**.
4. The Summary Screen is displayed.
5. Press **Finish** to set this property for the field, **Back** to change the settings, or **Cancel** to close without saving.

Changing or Resetting the Override Field

Once a field's language properties have been set to override the Printer and Label Options, you have choices in terms of changing this setting, or changing the language properties of the field.

Choice 1

1. Click on the field in Loftware Label Manager, then click on the ellipses on the Language Properties line of the Properties Box.
2. The Summary screen is displayed with an added button at the bottom entitled "Reset Defaults."
3. Press this button and the "field override" setting of this field changes to "default." This is the default setting for the Printer or Label. This field is now re-set as if the Language Properties Wizard had not been utilized; however, the font choice remains the same.

Choice 2

- Changing the **Font Category** or the **Font** in the Properties box for a "field override" field sets the Language Property for this field back to Default as well.
- Double-clicking in the **Font** or **Language Property** line in the Properties Box opens the Language Properties Wizard as well.

Choice 3

1. Click on the field in Loftware Label Manager, and the ellipses in the Language Properties line of the Properties Box.
2. The Summary screen of the currently selected field properties is displayed.
3. Choose the **Next** button to change the previous settings, such as a change from Native to True Type font, change in the Character Set or the font, etc.

Considerations when Printing with Native Fonts

Each Printer Family (and Printer Models within that family) has different requirements for International printing, therefore, you have to do your "homework" in advance to define what it is you want to do, and what your printers support. As a start, ask yourself and/or your Printer Manufacturer the following regarding printing in a foreign language:

- Is there a special card or module required?
- Is a special firmware build required?
- What are the memory requirements?
- Are code tables included in your printer, or do they need to be purchased or downloaded separately?
- Are the fonts you want to use included, or do you need to download them to the printer?
- Does your printer allow setting the Character Set natively on a "per-field" basis?

Printing with True Type Fonts

Non-Asian (Single-Byte) Language Choice

Font Character Set Selection – **Non-Asian** - The following figure displays the drop-down list for Non-Asian characters. This screen is displayed if:

- You chose **Non-Asian Language** in the first step of the wizard.
- Your target printer does not support **Native** Fonts.

True Type Fonts are useful if you wish to use different character sets, or if you want to use Unicode Data for a single-byte language such as Greek, Hebrew, etc.

Beginning in Loftware version 7.2, the edit controls (data entry) and input prompts displayed in the On-Demand Print Form (Label Design), the On-Demand Print Application, the On-Demand Print Client, and the Web Client for newly created TrueType font fields inherit the characteristics of the

selected TrueType font. Labels containing pre-existing TrueType font fields are not affected unless modified. By default, the applications listed above use the character set based on the system locale. For example, if the system locale is English, the character set that is used is ANSI. Selecting a different character set in the Language Properties Wizard sets that same character set for the input prompt, the edit control *and* the printed field. If the user desires that specific characters print, it is important to ensure that the characters are supported in a particular font. There are several utilities available that examine a PC for font and character availability, such as CharMap (standard on Windows PCs), BabelMap, TTE (True Type Explorer) and ListFont.

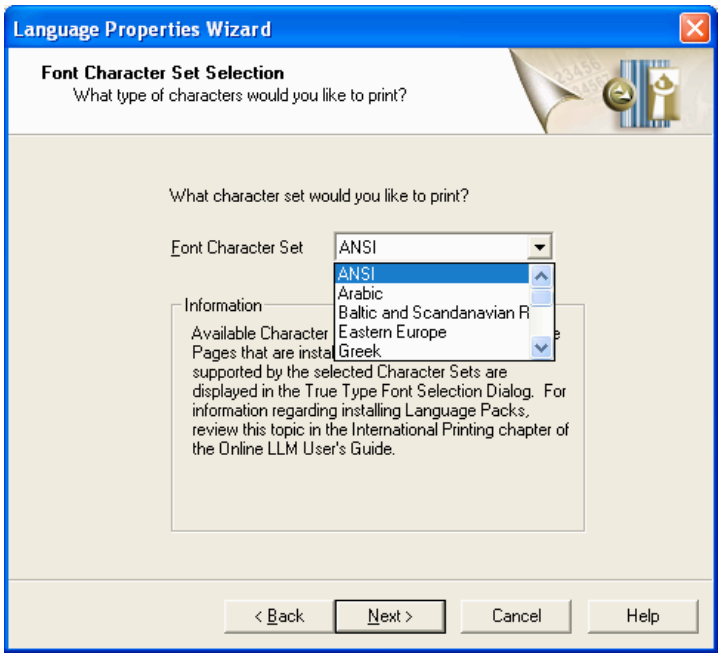

Figure 6-P: Choosing a Single Byte Font Character Set

1. Choose the type of character you would like to print from the Font Character Set list; press **Next**.

If you do not have a font for the selected font character set on your system, an error message is displayed, forcing you to go back and make another choice. Otherwise, the **Font Selection** dialog is displayed:

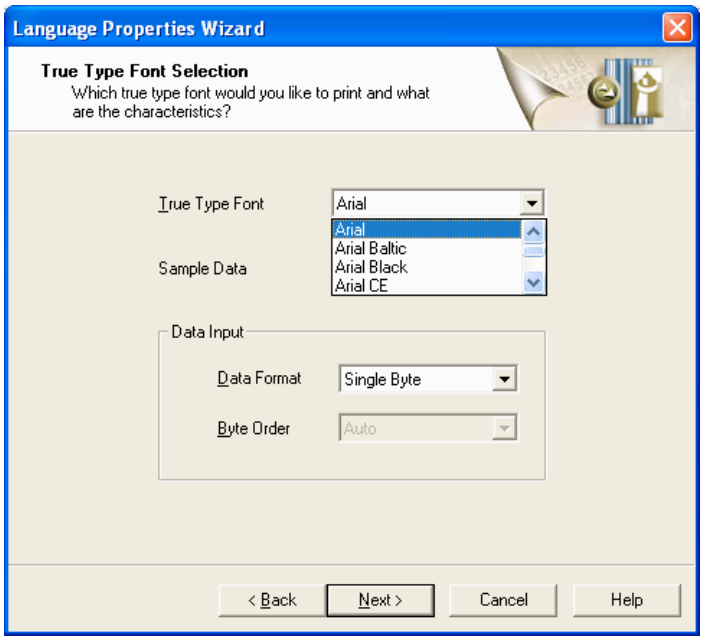

Figure 6-Q: Selecting the True Type font and Data Input

True Type Font – This list is filtered based on the previous selection, and displays the True Type fonts that are associated with that character set.

Why is the True Type Font I want to print not visible in this list?? – You must have the font you wish to print installed **on your PC**. Loftware populates the drop-down list based on a query of your PC, and if an installed font does not support the chosen Character Set, it is **not** displayed in the list. See the section entitled "Getting a Character Set and Fonts" earlier in this chapter.

Data Input Section

Data Format – This is the format that you wish to use to send data for the field, which is also dependent on whether or not the printer supports Unicode.

Single Byte – In this case, Loftware does not transform the data format, the code page for that character set is used.

Unicode UTF-16 **-** Choose this newer data format if your data is represented in this manner, especially if linking to a Unicode field in a database
(See definition earlier in the chapter)

Unicode UTF-8 **-** 8-bit transformation - use this setting if your data format is set to UTF-8 encoded Unicode. (See definition earlier in the chapter.)

Byte Order - The byte order by default is **Auto**. When set as Auto, Loftware looks for a marker before the data, and interprets the data as Big or Little Endian according to the marker. If you know the specific byte order, you may set this manually as Big Endian or Little Endian. If you are not sure, leave this setting at the default (Auto), except in the case of UTF-16 database data files, in

which case you *must* specify Big or Little Endian. See the definitions at the beginning of the chapter for information on Big and Little Endian.

Note: *Some programs such as Microsoft Access© encode the data as Unicode (UTF-16) but they may need to be re-encoded as UTF-8 using the Language Properties Wizard in Loftware in order to print.*

A Note about the "@" Symbol preceding some Fonts

The @ symbol preceding some fonts means that these fonts in these character sets print rotated 90º left for vertical printing. While the fonts are *not* displayed in Loftware Design Mode as rotated, they *do* print vertically. When creating a field in Design that is utilizing these fonts, you should rotate this field on your label, so an appropriate space is created on the label. (see the following figure). This is useful for Asian Fonts that are normally printed in vertical columns, right to left.

The Latin character "H" for a visual example, would look something like: H if rotated.
If this field is not rotated, it prints "on its side"

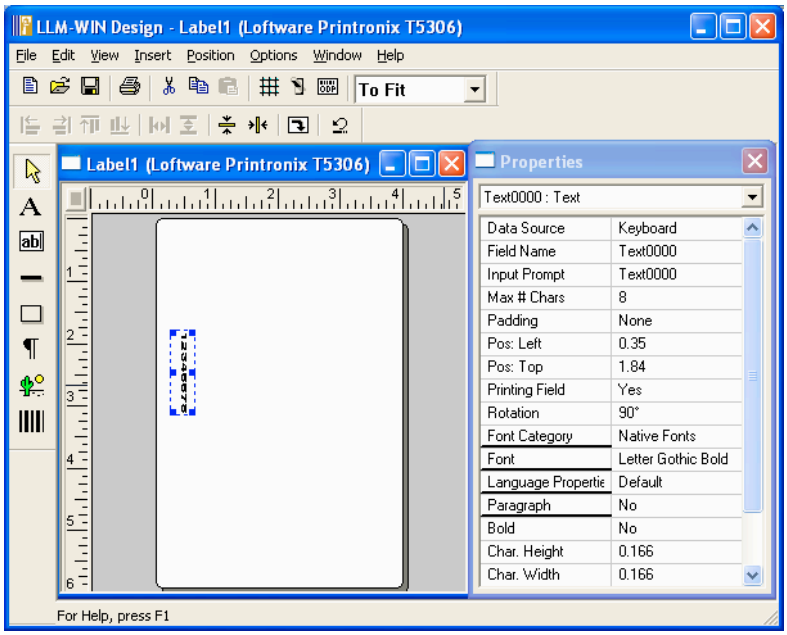

Figure 6-R: Vertical Printing in LLM

2. Click **Next** when finished with your choices.

   A summary of the Language Properties for the field is displayed:

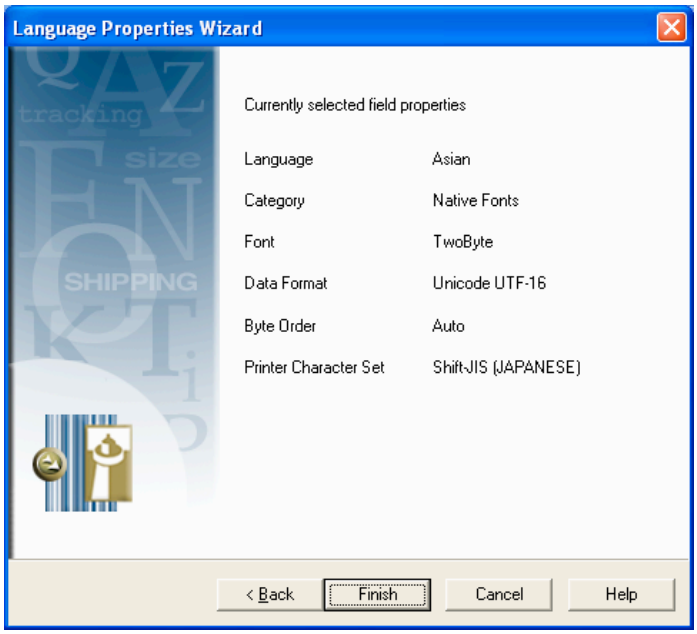

Figure 6-S: Summary Screen displaying the chosen Field Properties

3. Press **Finish** to set this field's properties, **Back** to change properties, or **Cancel** to revert to the default properties.

Printers and Double Byte Font Support

Loftware has developed our international printing capabilities to encompass **all** of our supported Printer Families and Printer Models, either natively, or with True Type fonts sent to the printer as bitmaps.

Native Font Support

Datamax

Datamax supports scalable resident DBCS fonts in printers that support their International Language Print Capability (ILPC).

- **Supported Printer Models:**
  I-4206, I-4212, I-4308, I-4406, I-4604, E-4203, E-4304, W-6208, W-6308, and W-8306.
- **Fonts Added to the Properties Box:**
  Scaleable Japanese, Gothic B and E Kanji, Scalable GB, BIG5 Traditional Chinese.
- **Supported Encodings:**
  EUC, JIS, ShiftJIS, Unicode, GB, BIG5

Intermec-UBI

Fonts may be downloaded to the printer memory, or may be added through PCMCIA cards.

- **Supported Printer Models:**
  Easy Coder 201, 301, 401, 501, 601, 501XP, 601XP, E4, F4.
- **Fonts Added to the Properties Box:**

  HonMincho Light (Japanese, SHIFT JIS Encoding)
  DLC Ming Medium (Traditional Chinese, BIG5 Encoding)
  Ming Cho Medium (Korean)
- **Supported Encodings:**
  Multiple encodings per font are not supported at this time**.**

Printronix

Double byte support in Printronix printers requires special printer firmware. Four different models may be ordered:

1. Hangul (KSC code table for Korean).
2. HanziGB (GB code table used in People's Republic of China).
3. HanziBig5 (Traditional Chinese Hanzi used in Taiwan and Hong Kong.)
4. JAP, supports Shift-JIS for Kanji character used in Japan.

When ordered, each of these firmware packages includes a default DBCS font.

- **Supported Printers in Loftware:** Printronix 5204, 5206, 5208, 5304, 5306, 5308, IBM_4400-004 (203 dpi) IBM_4400-004 (300 dpi), IBM_4400-006 (203 dpi), IBM_4400-006 (300 dpi), IBM_4400-008 (203 dpi), IBM_4400-008 (300 dpi).

Note: *IBM Printers are OEM Printronix.*

- **Fonts Added to the Properties Box: "TwoByte" –** This font selection is used for all of the DBCS settings. The printer includes the DCBS Font itself, so there is no ability or need to differentiate between them in Design Mode.
- **PSO DCBS Option –** This allows you the ability to set a default double-byte character set for use ONLY in "test print" mode in Loftware Design. LLM Design generates appropriate test print data for the printer firmware you are using.

Sato

The following fonts have been added to the Sato driver for Loftware Version 6.1 and above:

- Kanji 16x16 dot, JIS data
- Kanji 24x24 dot, JIS data
- Kanji 16x16 dot, Shift-JIS data
- Kanji 24x24 dot, Shift-JIS data

These fonts are “bitmapped”, meaning that representative glyphs reside in the Sato Printer and may be selected as you would select any other font in the Properties Box. Remember to enable the use of DBCS under Options | Preferences in Loftware Design mode.

Since Sato only supports these four double-byte fonts, they may be chosen under the fonts section rather than in Device Specific Options.

Note: *The choice of JIS and Shift-JIS is included in the font (rather than on the PSO/LSO) because Japanese is the only DBCS language Sato supports, and only JIS and Shift-JIS are supported. When one of these fonts is selected, the Language Properties Wizard opens. Also, the Sato driver does not currently use the "character set" option from the PSO at all, as the other printers do.*
Note: *The Sato manual also lists a 22x22 Kanji JIS font, but in testing with a CL408e this does not work so it has not been enabled through Loftware.*

Hardware - The Sato fonts are supplied on a small printed-circuit board (PCB) containing an EPROM chip. This PCB is swapped for one already in the printer.

Other Properties to note:

Bold - Bold property may be set YES/NO. (Sato manual refers to this as “emphasis.”)

Spacing - Spacing property may be set to “Smoothing” or “Non-Smoothing.”

The following Sato printers have the Kanji fonts available in Loftware:

SATO_CL408, SATO_CL408E, SATO_CL412, SATO_CL412E, SATO_CL608, SATO_CL608E, SATO_CL612, SATO_CL612E, SATO_M5900E, SATO_M8400RVE, SATO_M8459SE, SATO_M8460SE, SATO_M8485SE, SATO_M8490SE.

Zebra

Zebra supports a number of DBCS fonts, via several media. Loftware has focused on those Printer Models that support PCMCIA Cards, primarily the XiII and XiIII models, as well as Z4M and Z6M.

- Printer Configuration and Label Options dialogs:

  Default Single byte Symbol (Character) Set
  The default single byte character set on a per-printer or a per-label basis as described earlier. There is a Japanese single byte Character Set that should not be confused with the Japanese double byte character sets.

  Supported Encodings
  Japanese – JIS, Shift JIS, Unicode, EUC
  Chinese – GB, BIG5, Unicode
  Thai – Angsana
  Korean – Hangul, Wansung, Johab, Unicode

- **Fonts Added to the Properties Box:** The following DBCS fonts have been added to the properties box for supported Zebra Printers:

  Monotype Mincho (Japanese)
  Gothic Hangul (Korean)
  Monotype Kai (Traditional Chinese BIG 5 encoding)
  Monotype Sung (Simplified Chinese, BIG5 encoding)
  Monotype Times New Roman (Thai Angsana encoding)

Creating a Double-Byte File in Word 2000

The following information is designed to give you a very cursory look at how you can create a double byte database data source and database file source using Microsoft Word 2000©. A file needs to be created as an input to the DBCS field on the label. The field may **ONLY** be created as Database-Data, File Data Source, or Database-File. A keyboard source cannot add the double-byte font correctly. More information on Data Sources is found in the Data Sources chapter. The method used below is only one way to create this file.

Step 1 – Install the Global IME (Input Method Editor)

1. Click Start > Settings > Control Panel, select *Regional and Language Options*.
2. Under the Languages tab, click on the Details button.
3. Under the Settings tab, click on Add. Select the Input Language for the double byte language you wish to use, for eample, Japanese. Select the Keyboard layout/IME. Click on OK.

   The added Input Language (for example, Japanese) should now be listed.
4. Click on the Apply button. If you wish to change Preference settings, use the Language Bar and the Key Settings buttons. Language Bar preferences include showing additional language bar icons on the taskbar.
5. Click on OK.

Step 2 – Entering characters from the Symbol List

1. Choose the language from the systray (for this example, Japanese), and a floating keyboard is displayed.
2. Click on the down arrow next to the “Soft Keyboard” text.
3. Click on **Symbol List** from drop-down menu.
4. Click on the down arrow under the Symbol List Heading, change Symbol to “Shift JIS.”
5. Choose the proper font for your printer, in this case, “Kanji 1.”
6. Open Microsoft Word.
7. Choose the symbol(s) you need to print on your label from the floating keyboard.

The symbols are displayed in the Word Document.

Step 3 - Saving the Symbol File

1. Click the **Enter** button on the IME.

   The symbols/characters are visible, but are not saved to the Word Document prior to pressing Enter.
2. Change your input type back to English using the icon in the systray.
3. Save the file with *Save as Type* set to **Encoded Text (*.txt)**

   When you click on the **Save** button, you are prompted with the message “Styles, pictures and other formatting cannot be saved in an Encoded Text file, do you want to save **name of file.txt** anyway?”

4. Click **OK**.

The file is now saved in the encoded txt format and can no longer be opened nor viewed in Word, but it does have the correct raw data to be sent to the printer in Shift-JIS format.

Creating DBCS Font Fields using a Database or Files

It is also possible to add double-byte fonts to your label by sending the data for the field using **Data Source** in the Loftware Properties Box. It may be helpful for you to review the Data Sources chapter before you utilize this method.

Data Sources

Adding a DBCS font field with data sources is very similar to using any database or file datasource with Loftware.

Note: *Asian Characters are not displayed in Design View at this time, but* ***are*** *printed. ASCII characters are displayed in the Design View.*

1. Open a label in Design Mode, click on a field to select it.
2. Set the data source for the field to "Database-Data," "Database-File," or "File" in Data Sources.

   The data source must contain the double-byte encoded data (GB, BIG5, JIS, Unicode, etc.).

Note: *You MUST select a byte order for data sources! See the Language Properties Wizard for information on how to do this.*

For example:

3. Click on "File" in Data Sources.
4. Browse to the directory that contains the Encoded Text; click on it.

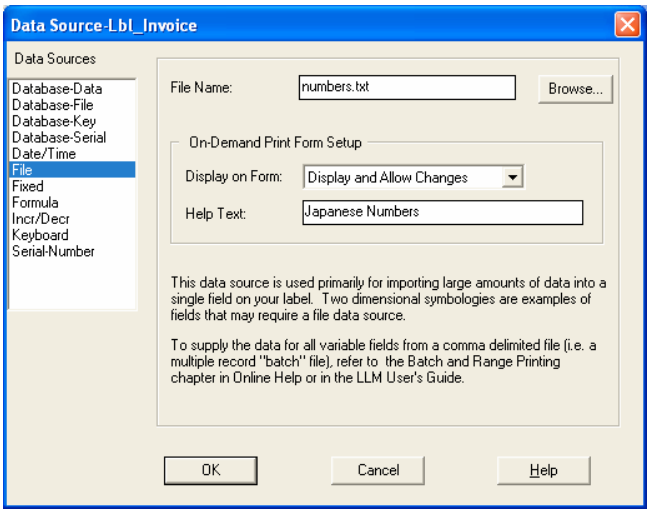

Figure 6-T: Adding the File Data Source

5. Click **OK**.

When the file (or data source) is sent to the printer, it is displayed exactly as it was created.

Database File Data Source

Note: *Read the Data Sources chapter for more information on Database File Data Sources.*

The Database-File Data Source is used to connect a field on a label with a field in the database, similar to the Database-Data datasource. The difference is that the Database-File assumes that the matching database field contains the name of a file that contains the data for the field.

Example: A manufacturer of time-dated materials might have several message labels in different languages. Rather than repeating this information for every product in the database, the user could create a set of “Message Label” text files in different encoded data and tell Loftware Label Manager to use the database to “look up” and retrieve an appropriate file in response to a number or code entered by the user. I.e., the database file may be named “korean.txt”, or “spanish.txt”, and contain different encodings appropriate for the country to which the label is sent. See figure below for an example.

The Database-File setup dialog defines the connection to the database. This connection is the same as described previously in this chapter on Database-Data. Additional information on database connections may be found in the Data Sources chapter in this User’s Guide.

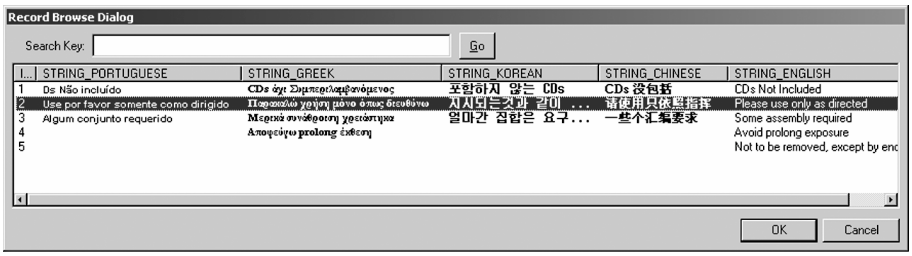

Figure 6-U: Database Browse Screen for a Unicode Database

Unicode Input Methods with the LPS

The following sections are only for use with the **Loftware Print Server**.

Method 1 – ODBC Linked Label

Most "production printing" companies have databases with Unicode data that can be linked to a label and printed in that manner. In this case, Loftware simply gets the data as it is, and prints it.

Note: The data format MUST be set for UTF-16 in the Language Wizard for Unicode fields to be displayed in the field selection dialog.

Method 2 – Unicode with ActiveX Client Control

Loftware's ActiveX Client Control accepts Unicode data (UTF-16). In the second part of the **Set Data** Command, actual data is inserted, and can be printed by Loftware. Refer to the ActiveX Client Control chapter in the LPS User's Guide for more information on using the ActiveX Client Control.

Method 3 – Pas file with Unicode UTF-8 Encoding

There is a way to create a simple test file whereby your Unicode UTF-16 data is converted to UTF-8 for printing by Loftware. Keep in mind that the following example is not recommended in a production environment, but is included here to give you a small example of how to create a pas file that expresses the data in an ASCII-compliant format, thereby allowing representation of double-byte fonts as True Type bitmaps. For speed, Loftware used one of the many online translation sites to get the needed data, but a translation service company is the safest bet to ensure accurate translation of your data.

How to create a .pas file with UTF-8 Encoding

1. Open Notepad© on your computer.
2. Type in the beginning of a .pas file. (See the LPS Chapter of the LPS User's Guide for more information.)
3. Copy data from your database.

Figure 6-V: Using a Database to include data in a .pas file

4. Paste the data into Notepad, after FieldName.

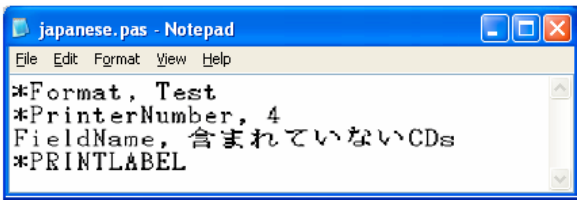

Figure 6-W: Using Notepad to create the sample .pas file

5. Click File | Save As, type in a File name, Save as type = **txt**, Encoding = **UTF-8**.

If the characters are not displaying correctly, check to make sure that you are using the correct font in Notepad. Japanese characters, for example, display using MS Gothic or MS Mincho.
(Set this under **Format | Font** in the Notepad Menu Bar)

Method 4 – Pas file with File Source

A .pas file option, “DELINKFILESRC”, has been added to allow the file name for a file data source to be specified in a .pas file. The default action for a field with a file data source is to use the file name saved with the label, but this command allows the file name to be overridden in the PAS file -- to be “delinked” from the field. More information on .pas files may be found in the Loftware Print Server chapter of the LPS User’s Guide, and more information on Datasources may be found in this guide in the Datasources chapter.

To use DELINKFILESRC:

- Include command “*DELINKFILESRC” in the .PAS file (see example).
- Specify the data file for a field by the command: f*ieldname, dataFileName.*

Note: *Remember that in this case, the Database File Field has a ‘File’ datasource!*

Example: .PAS File with DELINKFILESRC

Commands and Field Specifiers	Explanation
*FORMAT,fileSrc_zeb_KOR_3ENC.lwl	
*JOBNAME,zeb_korean1	
*QUANTITY,1	
*PRINTERNUMBER,22	
*DELINKFILESRC	Allow the file name for a file data source to be specified in the PAS file.
Company, Loftware	Data for the field “Company” is “Loftware”
FILEFIELD1,comment1.txt	Data file for the field “FILEFIELD1” is “comment1.txt”
FILEFIELD_DBCS1,dbcs_korHangul_cmn1.dat	Data file for the field “FILEFIELD_DBCS1” is “dbcs_korHangul.dat”
*PRINTLABEL	Print the label

Note: *In this example, the Korean data file was given a ".dat" extension to distinguish it from the ASCII text files with ".txt" extensions, but this is not required.*

Troubleshooting Font Fields

International Printing may not be an easy concept to grasp, but it is one that can be very valuable in expanding your shipping capabilities. If you encounter problems, check the following:

- If you are trying to print double-byte fonts natively, make sure that you have read information regarding how your printer stores double byte fonts and that you have the appropriate firmware, PCMCIA card or module to print the characters you need. Loftware does not support any Printer Firmware issues.
- Check Printer Options and Label Options to ensure that the correct language has been chosen in Loftware.
- Go through the steps for the Language Properties Wizard a few times to thoroughly understand how the wizard works.

Note: *The paragraph feature in Loftware Label Manager (Design) was designed for single-byte character sets, and as currently implemented, does not work consistently with the double-byte data used for DBCS fonts.*

In some cases, doubling the size of the paragraph fields on your label may work, if the data is consistently double-byte. However, many "double-byte character sets" may have both single-byte and double-byte characters, as listed below:

Japanese Shift-JIS(MS Code page 932)
Simplified Chinese GBK MS code page 936)
Korean Hangul(MS code page 949)
Traditional Chinese BIG5(MS code page 950)

A printer manufacturer may support these in slightly different ways, so it is best to review the actual code pages from that manufacturer.

Chapter 7 Templates and Wizards

Templates - Overview

This chapter is an introduction to templates and wizards. It describes Loftware's pre-designed label templates used to create production printing labels in less time and with less potential errors. If you are like most users, you routinely produce customized labels for production printing. This means that you are creating your own unique labels with bar code, text, lines, boxes and graphics. This chapter also contains information on creating custom templates using methods discussed in the previous chapters on design.

Loftware has many templates to choose from, including a template for the 1724-A label for General Motors Suppliers, as well as a wizard that creates the complex PDF-417 bar code that accompanies this label. This chapter explains how to customize your labels, how to open a template, and how to use some of Loftware's Wizards, specifically the UCC Bar Code, the General Motors (GM), the UCC Code 128, and the UPN Healthcare Bar Code Wizards. The wizards help you to create a custom formula that becomes a part of the bar code, helping you to comply with labeling standards the world over, as well as saving you time and effort. Using a template and a wizard together makes production label printing a far easier task than it has ever been.

Templates

In previous chapters, we have learned to use many of Loftware Label Manager's tools and techniques. In this and the next two chapters, "Data Sources" and "On-Demand Printing," we explore these topics more thoroughly.

The default directory for Templates created during a new installation is:
Program Files\Loftware Labeling\TEMPLATE\GENERAL.

What is a Template?

A label template is a "master" copy for labels of a certain type. A template can include the boilerplate fields you want to be displayed in each label of that type. You can select from the templates provided with Loftware Label Manager, or design your own.

Creating a New Label based on a Template

Refer to "Using a Compliance Label Template" in Chapter 3 for information on using the New Media Wizard to create a new label based on a compliance label.

When you select a template from the Label Template Selection dialog of the New Media Wizard, a thumbnail preview of the label template and a description are shown.

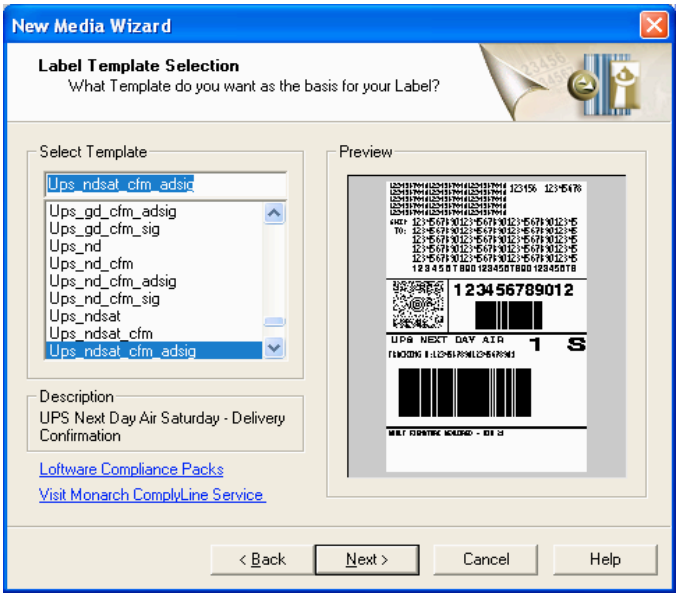

Figure 7-A: New Label Wizard dialog box displaying a thumbnail preview of UPS Template

If you select the normal (default) template, Loftware Label Manager displays the default label size (4x6); otherwise, the size stored in the template is used. With other templates, such as the Kmart or JCPenney template, you need to adjust the format and field data sources to fit your particular application.

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*Note: Not finding the Template you are looking for? Be sure that the correct path to the Templates has been chosen by clicking on **Options | File Locations** in Design View, and you are looking at "Templates."*

Creating Your Own Template

The compliance labels that ship with the Loftware Label Manager system are saved in the label designer as templates, with a .lwt extension. To make your own template, you may do one of two things:

1. Open a template in Loftware Label Design Mode.
2. Select **File | Save As**.
3. Save the label with a .lwt extension in the \Template folder.
4. Change the label to fit the requirements desired, save the label again, but this time with an .lwl extension.

or

5. Design a new label in Loftware Design Mode. (See the chapter on "Creating a Label" if you need information.)
6. Save the label, choosing the template option in the **Save File As Type** combo box.
7. Change the label as needed in Design Mode.

Note: You may have to change the extension of the label from lwl to lwt manually.

The template is available as a useful starting point the next time the **File | New** is selected; however, it is necessary to save the template as a label, using the .lwl extension

Bar Code Wizards

What is a Bar Code Wizard? A bar code wizard is a program that builds a bar code based on a particular specification, and includes a list of the symbologies available for that specification. You build the bar code step by step by choosing which components to add as you respond to each dialog box presented to you.

The next sections describe three of the many bar code wizards available in Loftware Label Manager, the GM Wizard, the UCC Code 128 and the UPN Wizard. By following this tutorial, see how the wizard helps you to:

√ Set the bar code values

√ Direct the creation of non-printing fields

√ Enter the necessary data for the components of the specification

UCC and RSS Wizard

While Loftware's Bar Code Wizard has been a valuable tool for quite some time, the UCC Bar Code Wizard was created for Version 7.3. Loftware's UCC Bar Code Wizard can guide you with the step-by-step creation of the formula for the data carrier. When a data carrier is chosen, the wizard "knows" which element strings are available for that data carrier, which helps to guard against entering incorrect data and helps the correct data structure to be built.

It may be helpful to review the UCC Specifications Sheet at http://www.uc-council.org/ before using the wizard to understand when and where different symbologies or data carriers are used.

UCC Wizard, Part 1 – Choose a Data Carrier

1. Select Insert > Bar Code Wizard in the Design mode. (Note that the Bar Code Wizard option is unavailable for RFID tags.)

2. From the BarCode Wizard Welcome screen, expand the list of wizards by pressing on the + symbol to open the tree view.

The following choices are displayed.

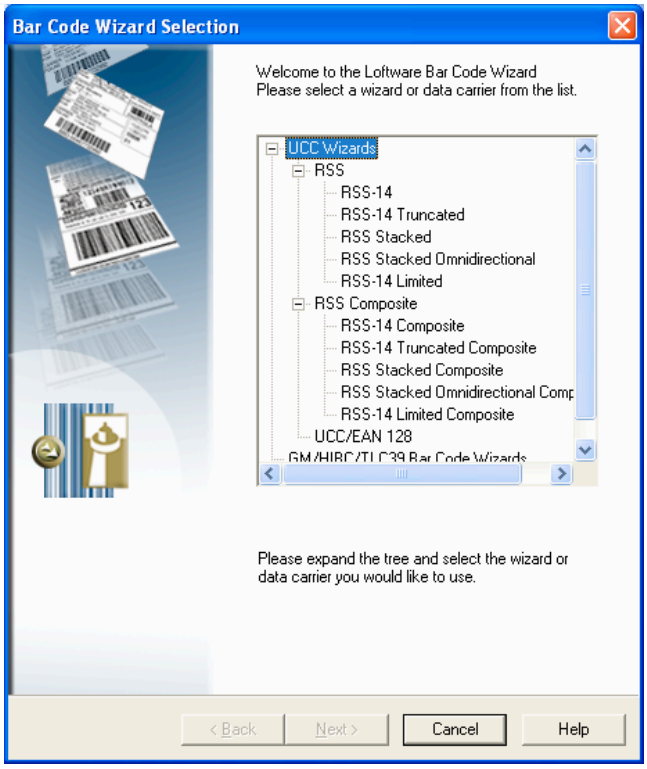


Figure 7-B: Bar Code Wizard Selection

3. Select a Data Carrier or Wizard from the expanded list, and then press **Next >**.

A preview at the bottom of the list displays a graphical representation of the chosen Bar Code. Note that the **Next >** button is disabled if a data carrier is not selected.

The Element String Selection dialog, described next, is displayed.

UCC Wizard, Part 2 – Element String Selection

Once the Wizard is chosen, Loftware displays all the possible Element Strings that can be encoded in the chosen Wizard (data carrier). Some of the Element Strings have specific formats with an example of the format displayed to the right of the data carrier. In some instances, certain element strings are required, and are automatically added to the element string list for that data carrier, as well as to the formula. In addition, if the chosen data carrier is a composite symbology, a Composite Delimiter is added to the formula. An example of a required element string and a composite delimiter that divides a linear and a 2-D symbology is displayed in the following figure. (The 2-D portion of the formula has not been added yet)

Field Name

Loftware displays a default Field Name, which can be changed. If the label you are adding the bar code to is constrained, (uses .lst files) a drop-down list is displayed from which the field name may be chosen.

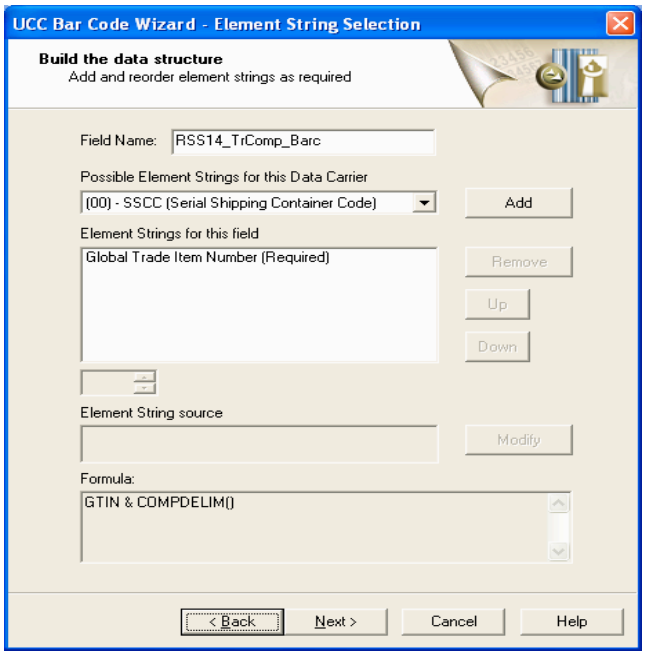


Figure 7-C: Element String Selection

Element Strings – Availability

The list of possible element strings is dependent upon the chosen data carrier. An example of possible choices for the previously chosen bar code follows.

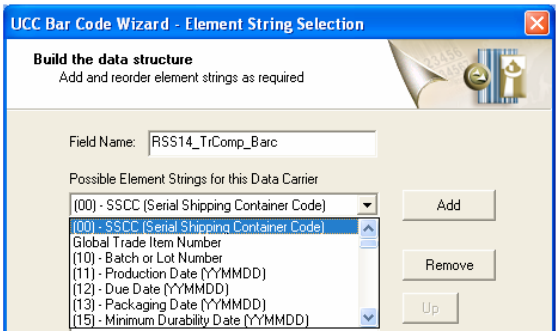


Figure 7-D: Partial List of Element Strings for the RSS14 Stacked Omni directional Composite Bar Code

Element Strings – Adding and Moving

1. Select an Element String from the list, and press Add. The string is added to the "Element Strings for this field" list in the center of the dialog, and to the formula section at the bottom of the dialog.

If the selected Element String's application ID displays an "n", the spin control is enabled, allowing you to choose the appropriate value for the "n" position in the Application Identifier. When the value is changed, the formula is updated. The following figure displays the element string (310n) – Net Weight in Kilograms. Below this element string is the number 6, which is the implied decimal position. See the General Specification sheet for more information on the meaning of the "n".

2. Highlight an Element String and press Remove, Up or Down to remove or move the string.

Please note that the formula is automatically updated when any of these buttons are pressed.

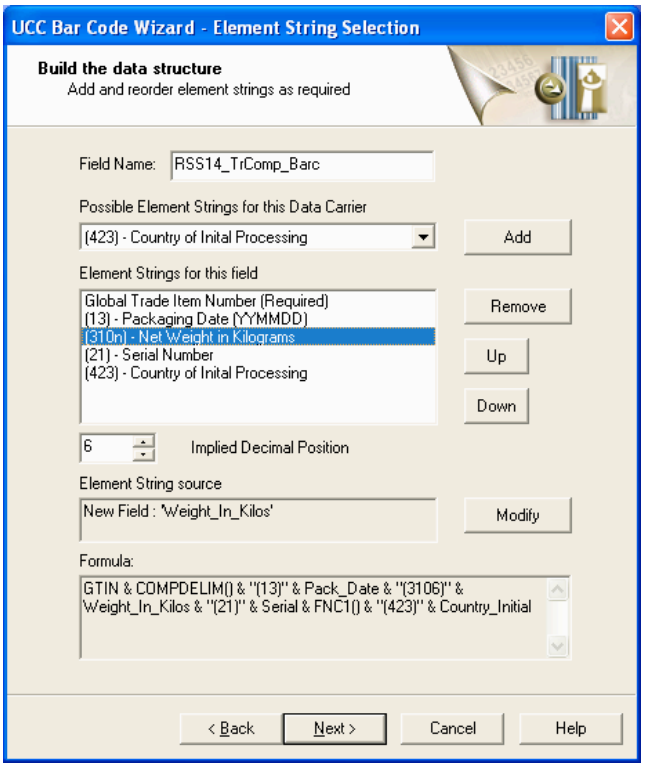


Figure 7-E: Adding, Moving or Removing Element Strings

Why move an Element String up or down? – Element strings that are variable in length (and some fixed length strings), such as a Serial Number, require a terminator character (FNC1[]) at the end of the data, unless they are placed as the last field in the data carrier. It is recommended that these fields be placed at the end of the formula when possible to save the extra space that the terminator character takes. Also, some applications require that the strings be placed in a specific order. The General EAN-UCC Specifications sheet may be helpful to determine the appropriate placement of the element strings, and/or whatever specification you are meeting.

3. Modify the string by highlighting it, and pressing the **Modify** button.

Why modify an Element String's Source? – The default source for each element string is a new, non-printing field (see the Creating a Label chapter for more information on non-printing fields). The term "modify" applies to the source of the data. If you would like to change the source of the element string's data to come from an existing field on the label, or a fixed string, then press "Modify."

UCC Wizard, Part 3 - Element String Modification

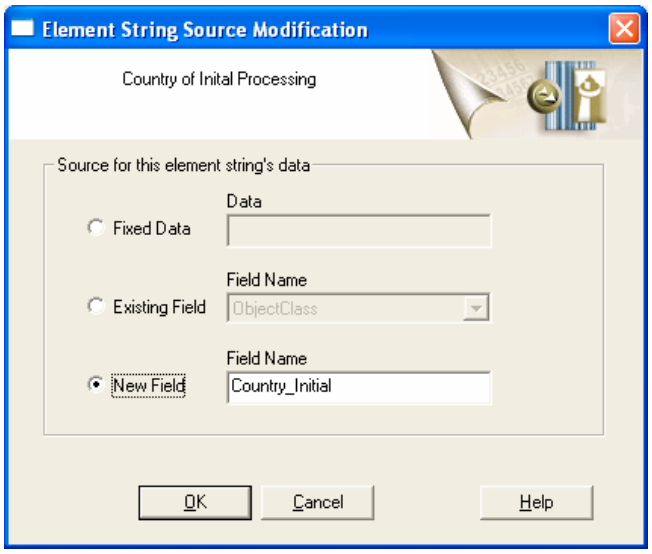


Figure 7-F: Element String Modification

Fixed Data – This allows the data to be added to the data carrier as a fixed string in the resulting formula. As an example, in the figure displayed above, the source for element string called "Country of Initial Processing" is changed to fixed data named "840" in the formula, which is the ISO code number for the United States.

Existing Field – This indicates the data is going to be taken from an existing field on the label.

New Field – This is the default datasource, which creates a new non-printing field. Note that if this label has been constrained using an .lst file, those fields are displayed in a drop-down list just as the field name was.

4. Press **O**K when you are finished modifying the Element String, or **Cancel** to exit without modifying the element string.

UCC Wizard, Part 4 – Wizard Summary

The Wizard Summary Screen is displayed:

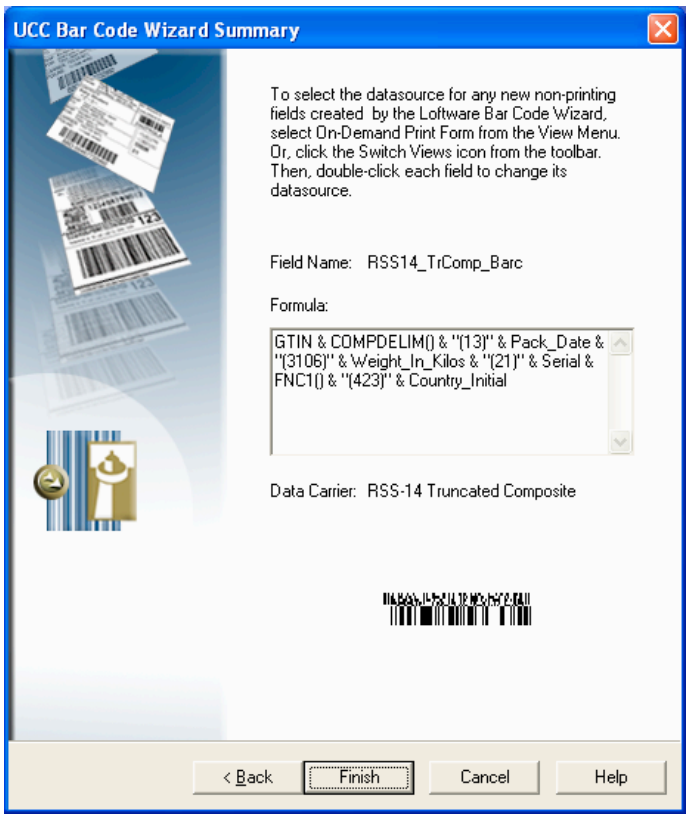


Figure 7-G: UCC Bar Code Wizard Summary

The summary screen contains the following information:

Field Name – The name given to the Field.

Formula – The complete formula as created in Parts 1 and 2. The formula displayed here is not directly editable.

Data Carrier – The title of the Data Carrier as chosen in Part 1 of this document, along with a visual representation of the chosen bar code below.

1. Press **OK** if you are finished with the data carrier.
2. Press **<< Back** to return to previous screens to make changes.
3. Press **Cancel** to exit the Wizard.

Additional Information

If you add the same element string twice, the Wizard lets you know that another instance of this element string exists, and that you may remove one if you did this in error. Duplicate field names are not permitted in the UCC Bar Code Wizard. For example, if an SSCC element string is added when there is an existing "SSCC" named field , a message is displayed which states that the default name for the second element string "SSCC" has been changed to "SSCC_2".

UCC Wizard, Part 5 – Changing the Formula

Once you have exited from the Bar Code Wizard, it is possible to go back and alter the bar code's formula.

1. Double-click on the bar code in design view.

   A warning message informs you that the formula you are about to edit was created with the Bar Code Wizard, and therefore, any changes you may make to it may render the bar code nonfunctional.

2. Click **OK** to open the Data Source dialog.

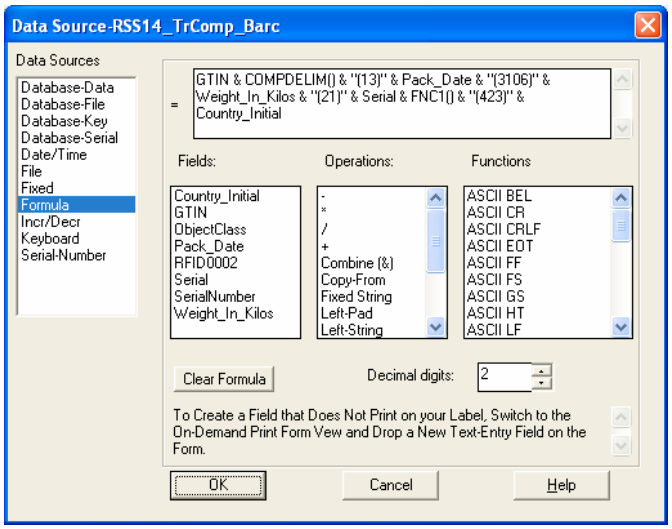


Figure 7-H: Data Source Dialog

3. Edit the formula directly, or make changes to the formula using the Fields, Operations, or Functions columns.

4. Press **OK** when finished, or **Cancel** to exit without making any changes to the formula.

GM Wizard

Introduction

In 1999, General Motors adopted a uniform global parts labeling template that enables suppliers to use a common label for shipment to all GM facilities worldwide. All suppliers shipping production parts to GM facilities were required to begin using the label by March 31, 2000. Loftware developed both a template and a Bar Code Wizard for the GM1724 Label Specification in 1999 in preparation of this requirement, as well as updates as changes to this standard have been made. The wizard easily creates the complex PDF417 2D Bar Code formula for the label quickly and correctly!

Requirements

In order to utilize the powerful components of the GM Wizard, you must have the following:

1. Loftware Label Manager Version 4.2.2.21 or above.
    - The Security Code is set to 5 by default, and must remain at 5 in order to print the PDF417 bar code with GM's compliance standards.
2. A printer that has the ability to natively print PDF417 Bar Codes. Loftware supports the following Printer Families: C.Itoh, Citizen, Datamax, Eltron, Fastmark, Intermec, Imtec, Monarch, PCL5, Pressiza, Printronix, QuickLabel, TEC, UBI, Sato and Zebra.
    - Of these Printer Families, Loftware supports several Printer Models. (See Supported Printers on the Loftware Website to view the supported models).
    - Of the supported Printer Families, be aware that not all models within these families are capable of printing the PDF417 Bar Code.
    - Of the models that are capable of printing the PDF417 Bar Code, not all of them have the correct firmware to print the PDF417 Bar Code correctly. In some cases, firmware upgrades or changes may need to be made. Check with your hardware manufacturer for details.
    - Fonts: Loftware does NOT recommend the use of TrueType Fonts when selecting the font for the label, as these are downloaded as images, and significantly decrease the throughput time. GM does NOT require you to use TrueType fonts at this time; however, any Native Fonts utilized must be equivalent.
    - Please check with the Printer Manufacturer for this information regarding your printer's ability to print the PDF417 bar code **before** calling Loftware for support.
3. A PDF417 scanner or viewer is not required, but is recommended in order to view the accuracy of your design and formula prior to submission to GM. GM mentions laser raster scanners and viewers in its documentation.

Specifications

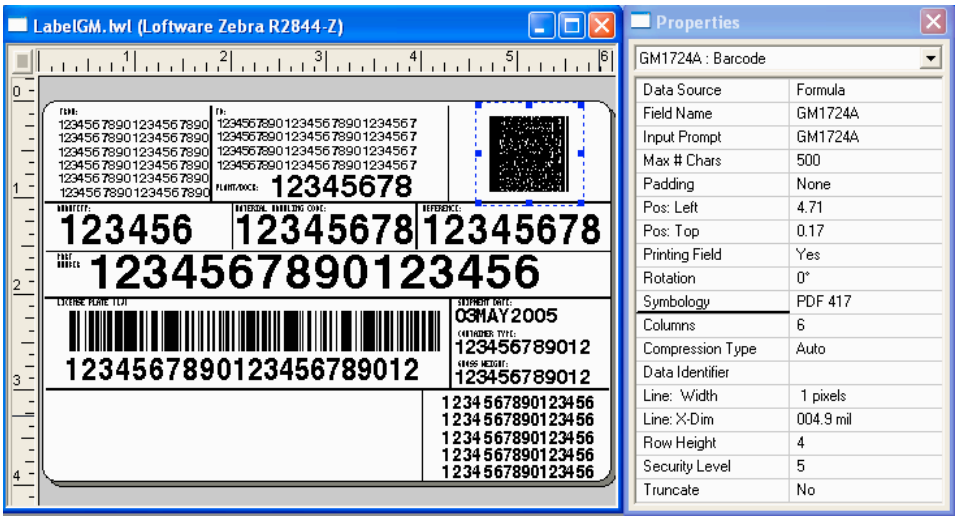


Figure 7-I: GM label 1724-A created using the GM Bar Code Template and Wizard

You may find current specification information including contacts and telephone numbers by visiting the GM Supplier Website. Link to the GM Supplier Site There, you can gather pertinent information about format and font specs, data sources, and data layouts. Templates are also displayed, as well as layover information. The GM1724 was replaced with the new standard as in the following description:

GM1724-A – Individual Containers: a label for productive parts used on containers of like part numbers. (Sequenced parts, modular parts, and non-productive parts are not currently covered under this standard, but service parts are included).

GM1724-B – Master Label: Suppliers are notified if this label is required by their customers.

GM1724-C – Mixed Label: Suppliers are notified if this label is required by their customers.

Note: Please read these specifications completely before proceeding with the GM Bar Code Wizard.

GM Bar Code Wizard: What it Does and Does Not Do

Loftware's GM Bar Code Wizard automatically builds the complex PDF417 Bar Code, and inserts it into a pre-made GM template. The template contains all the sub-blocks needed to meet the new standard. The bar code is built by systematically adding together a data sequence that creates a formula designed for the specification. When placed into the template, this completes the required GM Label. This outstanding product makes designing both the required and recommended fields for this label much easier. You do not have to spend time building the formula yourself and risk possible errors in fields, operations or functions. As you enter your specific data, the formula is automatically updated to reflect each addition you make.

The wizard is NOT a guarantee of a perfect GM approved label, but it makes the goal of shipping compliance to GM a far easier task, as well as saving you significant time. To ensure compliance, Loftware advises you to design your label and submit it to GM for approval **before** printing production labels. The GM Supplier Site has label submission information.

Warning! *If you delete any fields created with the wizard, all the data and any formulas you have designed are lost. If you change the formula for this label after you have designed it, then the label may not print correctly, and may not be in compliance.*

GM Template and Wizard Instructions

Select a GM Template

1. Choose **File | New** from the menu bar in the Loftware Label Manager Design.
2. Check "**Compliance Label Template**" in the New Media Wizard; press **Next**.
3. Choose a Printer Family and Model from the drop-down lists, press **Next**

The following is displayed:

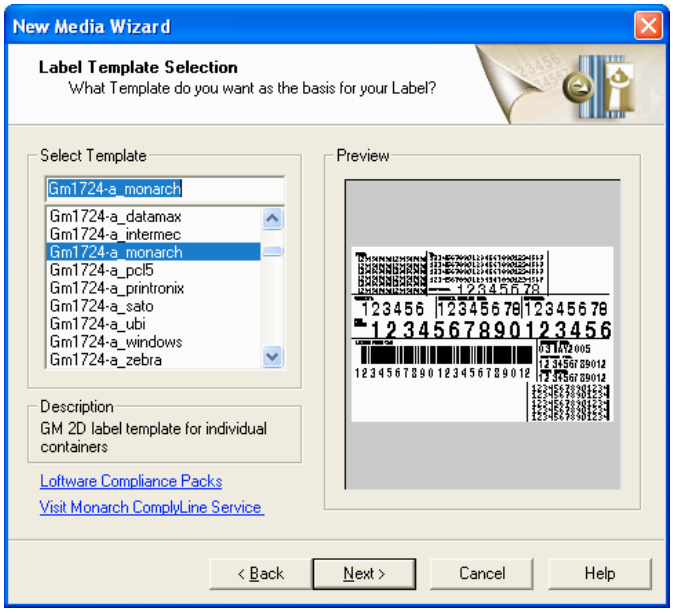


Figure 7-J: Choosing a Template

4. Select the template for the GM label you want to design; click **Next**.
5. Click **Finish** when the summary screen is displayed, or press **Back** to change any selection.

Note: Some of the library of templates listed have printer names associated with them. Choose a template from the template list that matches the printer previously chosen.

The template for the label is displayed in design view.

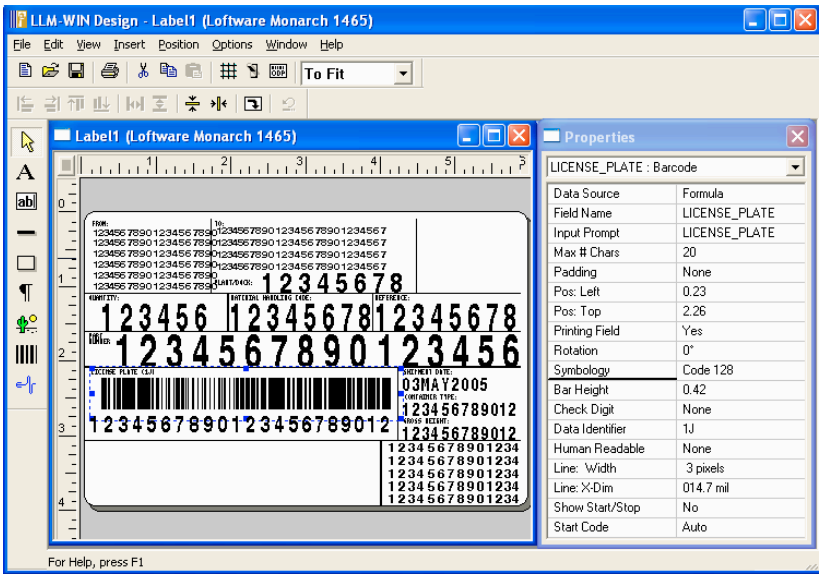


Figure 7-K: GM Label Template

6. Continue creating the PDF417 bar code using the GM Bar Code Wizard:

GM Wizard, Part 1: Getting Started

From Loftware Design Mode:

1. Choose **Insert** > **Bar Code Wizard** from the Design menu.
2. Choose **GM/HIBC/TLC39 Bar Code Wizards** from the list of available wizards; press **Next>**.

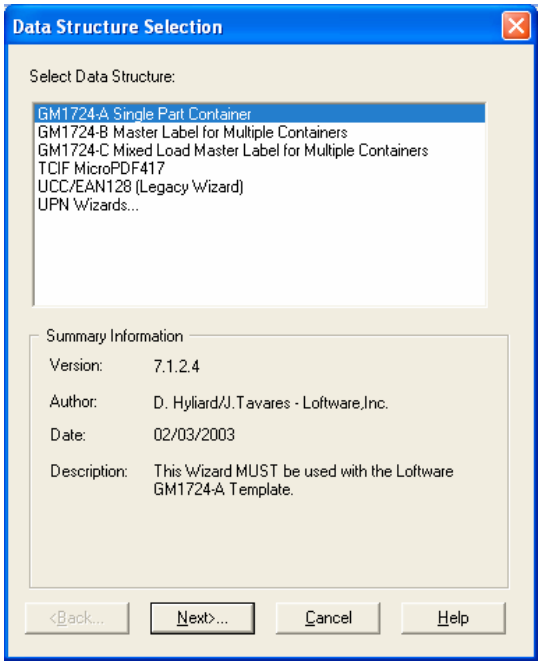


Figure 7-L: Wizard Data Structure Screen

GM Wizard, Part 2: Building the GM Data Structure

1. Choose PD**F417** from the Symbology List; click **OK**.

The first dialog box, regarding Kanban information, is displayed.

What is Kanban? The name 'Kanban' was the word used for shop signs in old Japan. Today Kanban is a term used to describe the flow process in Production Ordering. Kanban specifies the item and the production quantity, the materials required, where to find them, and where to store the finished item.

*Note: If you make an error in selection, click the **Back** button on the GM Bar Code Wizard, and make the correct choice.*

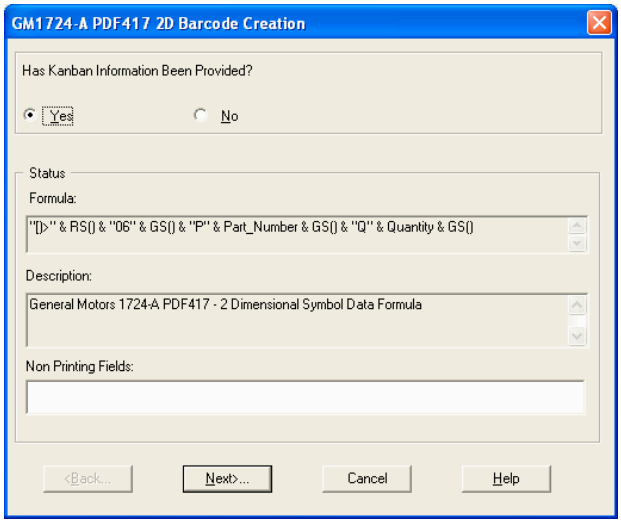


Figure 7-M: Kanban dialog box

2. Choose Yes or No; click **Next**.

   If **Yes**, the Container Type dialog box is displayed.

What is Container Type? Container type information is a descriptor of the actual container that holds the parts. The descriptor should match the designated container type within the GM Plant(s).

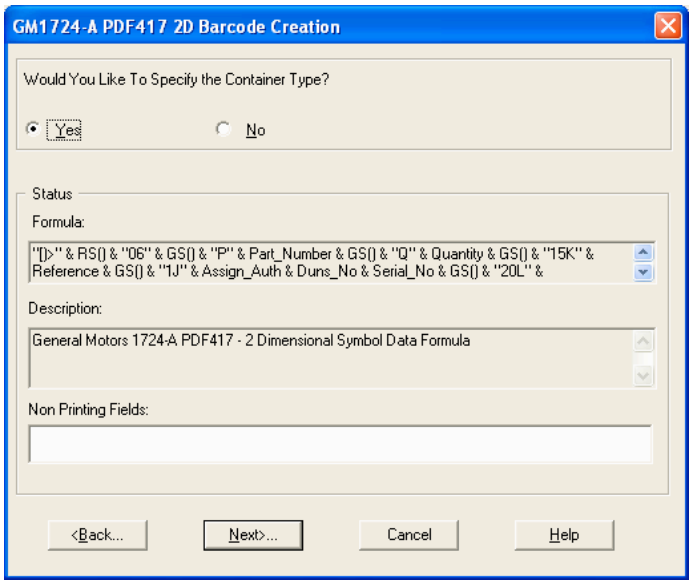


Figure 7-N: Container Type Dialog Box

If **No** is selected, the Reference or PO Information dialog box is displayed.

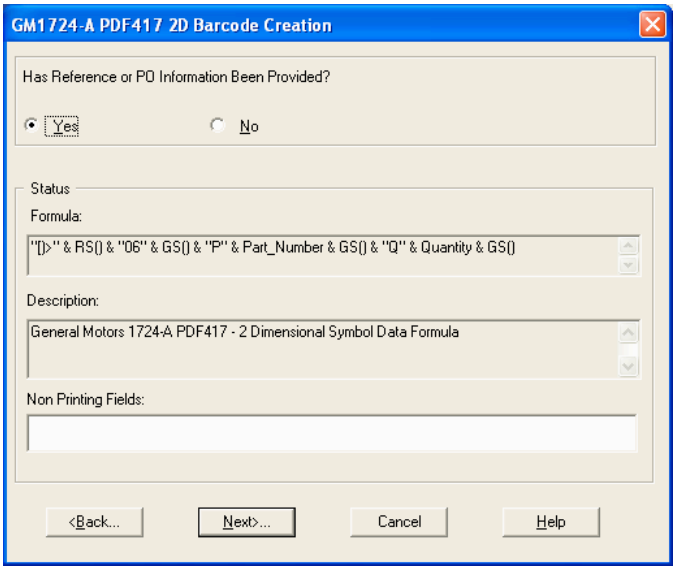


Figure 7-O: Reference or PO Information Dialog Box

3. Choose Yes or No; click **Next**.

   If Yes**,** the **Field Name** dialog box is displayed.

   If No, or the **Container Type** dialog box is displayed. (See figure above.)

4. For Field Name dialog box, enter a Field Name, or accept the default name, and click **Finish**.

5. For Container Type dialog box, choose Yes or No; click **Next**.

   If either Yes or No is chosen, the **Field Name** dialog box is displayed.

6. Enter a field name, or accept the default name, and then click **Finish**.

GM Wizard, Part 3: Finishing and Printing the Label

After you have entered a name for the label and pressed **Finish**, the field is placed on the label in the upper left corner. Use the cursor or the keyboard arrows to move the bar code field into place at the upper **right** corner of the label (for GM1724-A labels, as shown in this section).

The completed GM Label, with the PDF417 bar code in place, is shown:

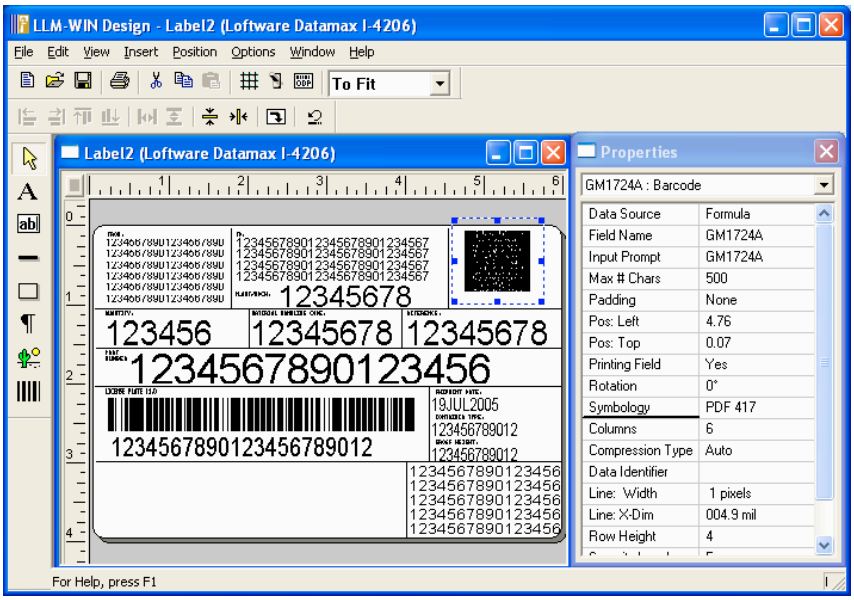


Figure 7-P: GM label, with PDF417 Bar Code Inserted

Refer to the printing chapters in this User's Guide, and Chapters 1 through 3 of the LPS User's Guide to review how to print this label.

You can print this label using Loftware technology such as:

- On-Demand Print or Batch Print Modules
- The Loftware Print Server Technology

Or, from other Windows Applications using:

- Loftware's ActiveX Controls, or the "Thin" Clients
- Loftware's Internet Printing Applications

Note: You may have to make changes on the On-Demand Print Form to assist you with any non-printing fields you may have. See the On-Demand Printing chapter for more information.

Advanced Information

GM Formula Data

Double clicking on the newly created bar code displays the formula created by the Loftware GM Wizard:

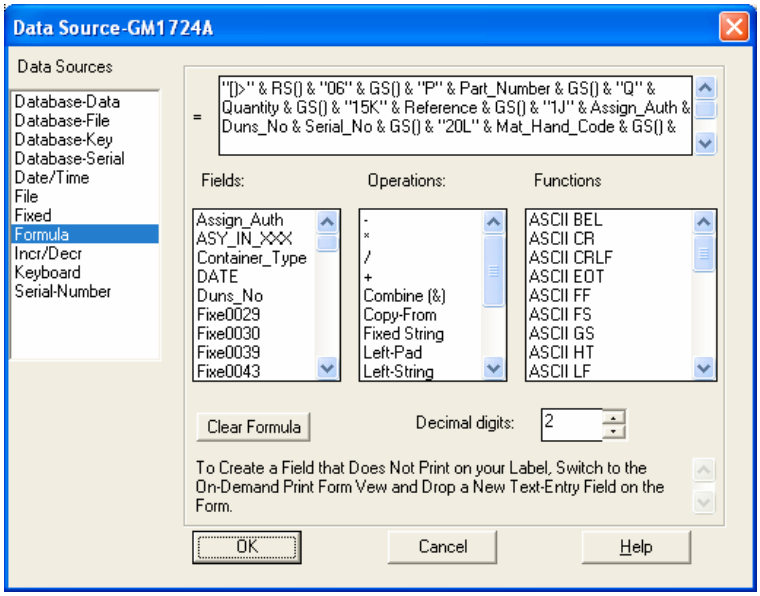


Figure 7-Q: Formula Dialog Box

Data Fields

The following data fields are included in the PDF417 symbol on the GM-1724-A label:

Note: "" Indicates a required field, however, this is subject to change by General Motors without notice. As suggested previously, verify all GM specifications with GM.*

Part Number*

Part Quantity*

Kanban

Reference

Purchase Order

Plant/Dock*

License Plate*

Material Handling Code*

Container Type (Recommended)

Weight (Recommended)

***Note:** - The License Plate field is a combination of the supplier ID, combined with the supplier generated ship pack serial number.*

GM - Additional Components

In addition to the data fields, there are additional components that are required by GM for processing of the label. These components are detailed in the following table:

Component	Fixed Data	Function	Variable Data Field Name
*Compliance Indicator	[)>		
*Format Trailer		RS()	
*Format Header	06		
*Part Number Data ID	P		
*Part Number			Part_Number
*Data Element Separator		GS()	
*Quantity Data ID	Q		
*Ship Qty			Quantity
*Data Element Separator		GS()	
Kanban Data ID	15K		
Kanban			Reference
Data Element Separator		GS()	
Reference Data ID	K		
Reference			Reference
Data Element Separator		GS()	
*License Plate Data ID	1J		
*License Plate			ASSIGN_AUTH & DUNS_NO & SERIAL_NO
*Data Element Separator		GS()	
Material Handling Code Data ID	20L		
*Material Handling Code			Mat_Hand_Code
Data Element Separator		GS()	
Container Type Data ID	B		
Container Type			Container_Type
Data Element Separator		GS()	
Weight Data ID	7Q		
Weight			Weight
*Weight Qualifier	GT		
*Format Trailer		RS()	
*Message Trailer		EOT()	

The functions from the table above result in the encoding of the following characters into the symbol:

Function	Hex	Decimal
GS()	1D	29
RS()	1E	30
EOT()	04	04

UPN Healthcare Wizard

- Allows the creation of all UPN-approved bar codes, including: HIBC Code 128, HIBC Code 39 and UCC/EAN128
- Allows automatic merging of bar codes to meet UPN specifications
- Allows automatic insertion of flag characters and check digits required for healthcare industry bar codes
- Supports UPN-approved data structures

This section walks you through the entire bar code creation process using Loftware's Bar Code Wizard. Instructions include how to:

- Create Primary, Secondary, or Combined bar codes for your label file that require UPN (Universal Product Number) bar codes.
- Create other sophisticated bar codes using the Loftware Bar Code Wizard.

UPN Bar Code Options

Loftware Label Manager and the Loftware Print Server use the Loftware UCC Bar Code Wizard to help create bar codes that comply with the UPN specification for both the UCC and HIBC. The wizard walks you through a series of screens asking specific questions about the information you want in your Primary and/or Secondary bar code.

The bar codes contain these options:

Primary	Labeler Identification Code, Manufacturer ID, Product/Catalog Number, and Unit of Measure.
Secondary	Information such as Lot Number, Quantity, and/or Date.
Combined	Combines the Primary and Secondary information into one bar code.

The questions you answer automatically create a formula that produces the bar code for your label.

Creating a Primary and Secondary LIC Bar Code

UPN Wizard, Part 1: Getting Started

- Open the Bar Code Wizard
- Choose UPN

To get started:

1. Click **Start > Programs > Loftware Labeling > Design 32**. A blank label on the left side of the screen and a blank Properties Box on the right side are displayed.

*Note: If you do not see the Properties Box, use the **View | Properties** menu command to display it. If you do not see a blank label, select the **File | New** menu commands and create a new label. To adjust the label size, use the **File | Media Setup** menu command.*

2. Choose **Insert > Bar Code Wizard** menu at the top of the screen.
3. Choose **GM/HIBC/TCIF Bar Code Wizards** from the list of available wizards; press **Next**.

UPN Wizard, Part 2: Building A LIC Data Structure

- Create a LIC Primary Bar Code
- Learn about Data Structure Screens
- Add specific and optional information to a Primary Bar Code

To build a LIC data structure:

1. Choose **UPN** Wizar**ds** at the end of the Data Structure list.

   The first Bar Code Wizard dialog is displayed.

2. Click the Primary button.

UPN Wizard, Part 3: Creating a Primary Bar Code

To create a primary bar code:

1. Select the **LIC** option from the Data Structure screen
2. Select the bar code symbology you want to use.

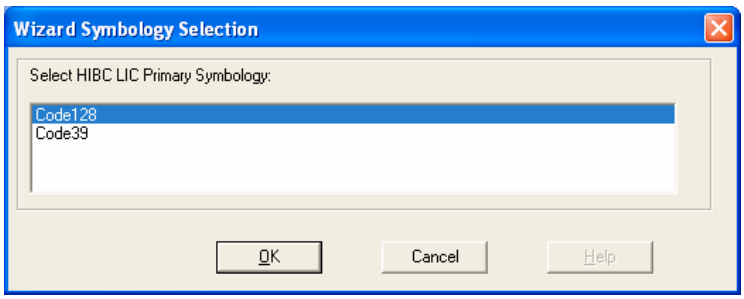


Figure 7-R: Symbology selection Screen

If this is the first time this symbology has been selected, the following screen is displayed:

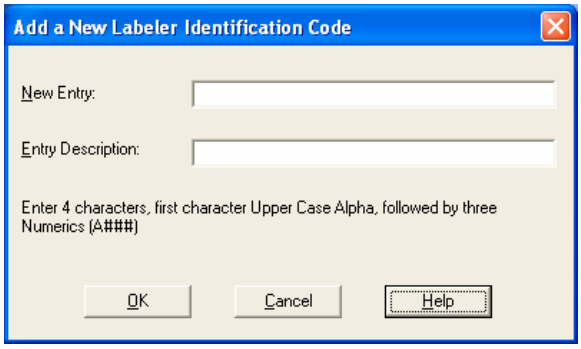


Figure 7-S: Labeler Identification Display Screen

3. Type in a New Entry, (*Example:* **A234)**, and the Entry Description (*Example:* 'Flag Character'); click **OK**.

4. Select the Labeler Identification Code from the box; click **Next**.

---

*Note: To add another identification code, Click the **Add New Entry** button and follow the instructions on the screen. To delete a code, select the Identification Number and then Click the **Delete Entry** button. **Warning! Once you delete the ID, you cannot undelete**!*

The following screen is displayed:

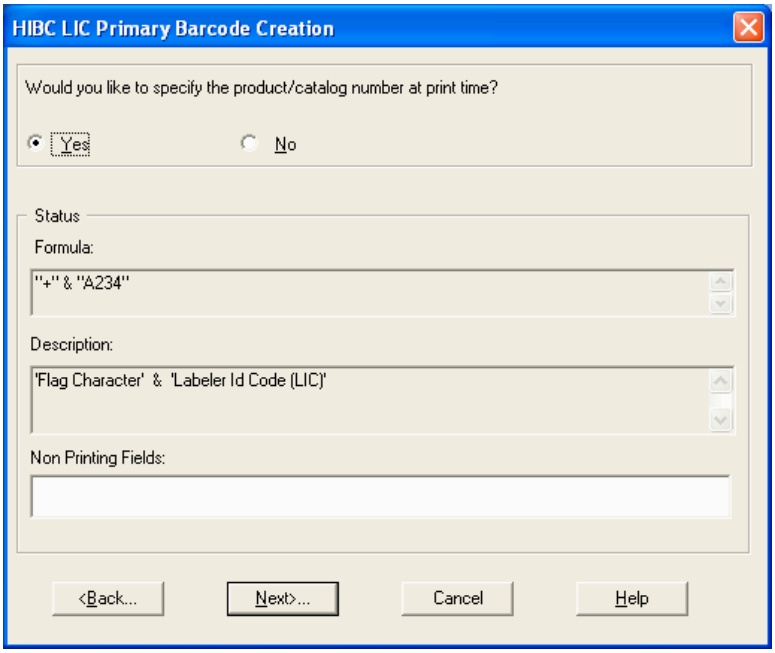


Figure 7-T: Product/Catalog Number dialog box

5. Choose **Yes** or **N**o, click **Next**.

   - Choosing **Yes** allows you to enter the part number at print time from the keyboard (On-Demand printing) or a database (Range Printing).

   - Choosing **No** allows you to enter the part/catalog number on the next screen. You do not have to enter the part/catalog number at print time.

6. Type in new values for Field Name and Length or leave the default values in place; click **Next**.

   - If No is selected, the next dialog box prompts you to enter a **Product Number**.

7. Enter up to 13 digits; click **Next**.

The Unit of Measure ID screen is displayed.

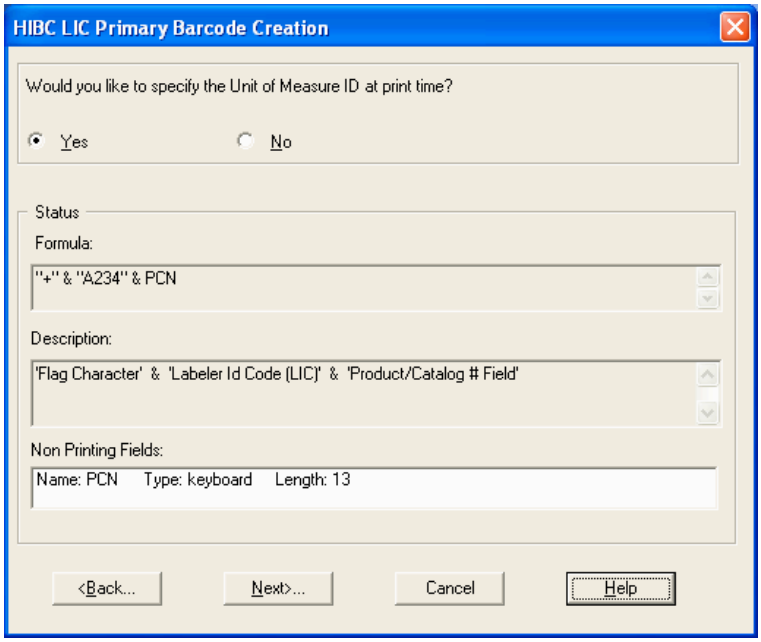


Figure 7-U: Unit of Measure ID at Print time Dialog Box

8. Select **Yes** or **No**; click **Next**.
9. Enter a field name for Unit of Measure; click **Next**.
10. Enter a Unit of Measure value (see below); click **Next**.

0 = unit of use	5 = case
1 = unit of sale	6 = reserved
2 = reserved	7 = master case
3 = carton	8 = reserved
4 = reserved	9 = variable quantity container

11. Enter a name for the Primary bar code; click **Finish**.

*Note: If data is entered from a keyboard or database for non-printing fields, select On-Demand Print Form from the View menu, or, Click the Customize On-Demand Print icon from the toolbar. Then, **DOUBLE**-Click each field to change its data source.*

You may see the following screen (after adjusting the fields) depending on your choices:

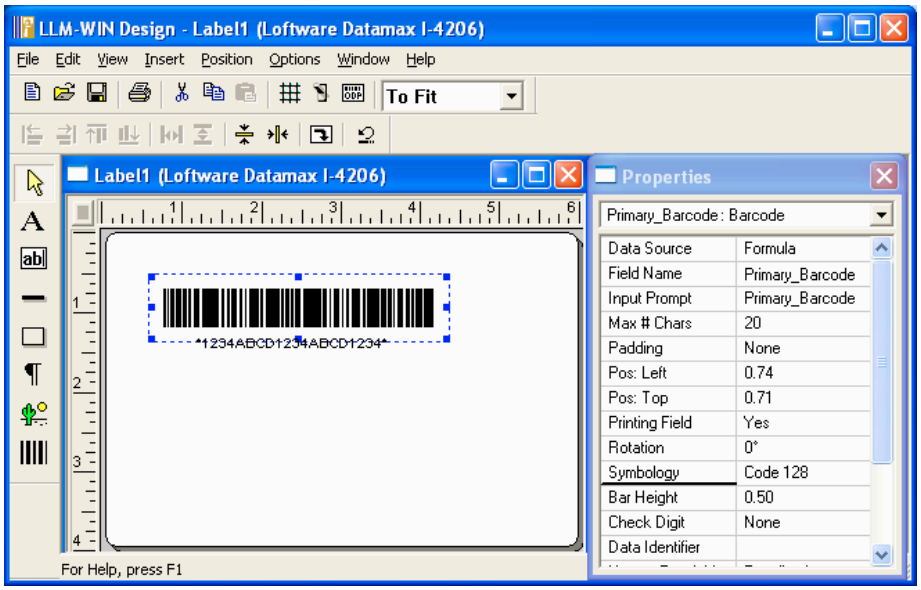


Figure 7-V: Primary Field Creation

UPN Wizard, Part 4: Creating a Secondary Bar Code

You can create a LIC or a UCC/EAN Secondary Bar Code containing information such as Lot Number, Quantity, and/or Date. This example allows you to:

- Create a LIC Secondary bar code
- Learn about data structure screens
- Add Julian date
- Add Lot Number

To create a Secondary Bar Code:

1. Follow the steps from UPN Wizard, Part 1, in the preceding section.
2. Select and press the UPN Wizard Button. The following is displayed:
3. Click the Secondary Button; select **LIC** as the Secondary bar code data structure, click **Next**.

Note: You can always return to the previous screen by clicking the Back button.

4. Select the bar code symbology you want to use; click **OK**.

The following screen is displayed:

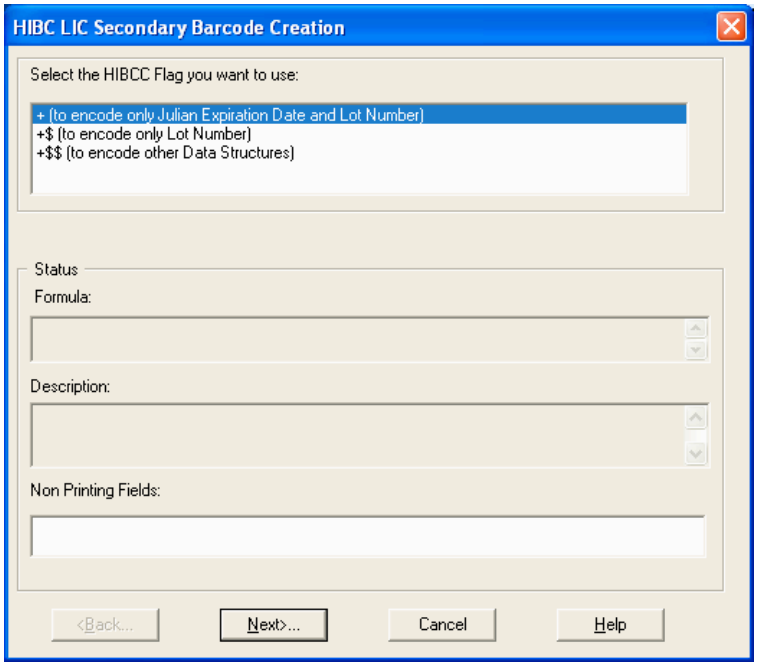


Figure 7-W: Selecting the HIBC Flag Character

5. Select the flag you want to use; click **Next**.

UPN Wizard, Part 5: Create a Bar Code with Julian Date and Lot Only

Creating an Expiration Date in Julian format and a Lot/Batch number in the bar code:

1. Select the Symbol to encode, “Only the Julian Date” and “Lot Number” (+); click **Next**.
2. Enter a field name for the date.
3. Enter the number of days until the product expires; click **Next**. (Example: If the product expires in one year, enter 365. The date printed on the label is one year from the day the label is printed.)

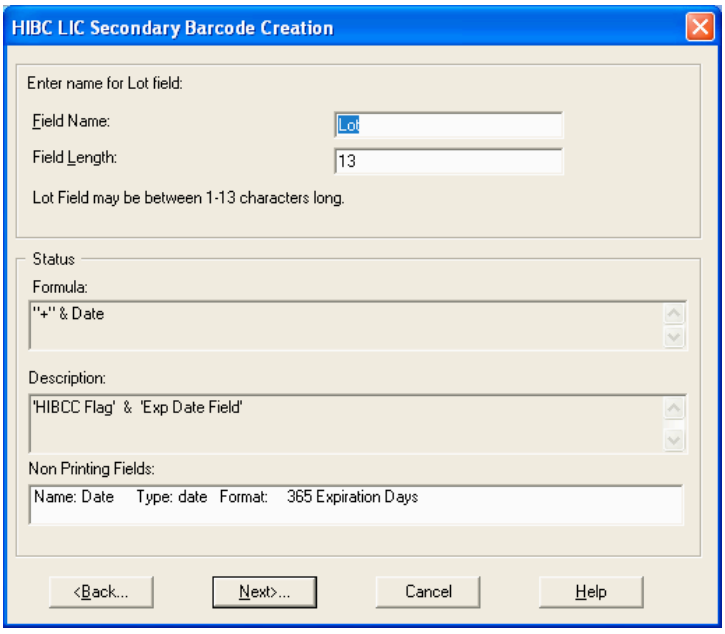


Figure 7-X: Lot Field Creation

4. Enter a field name and length for the Lot; click **Next**.

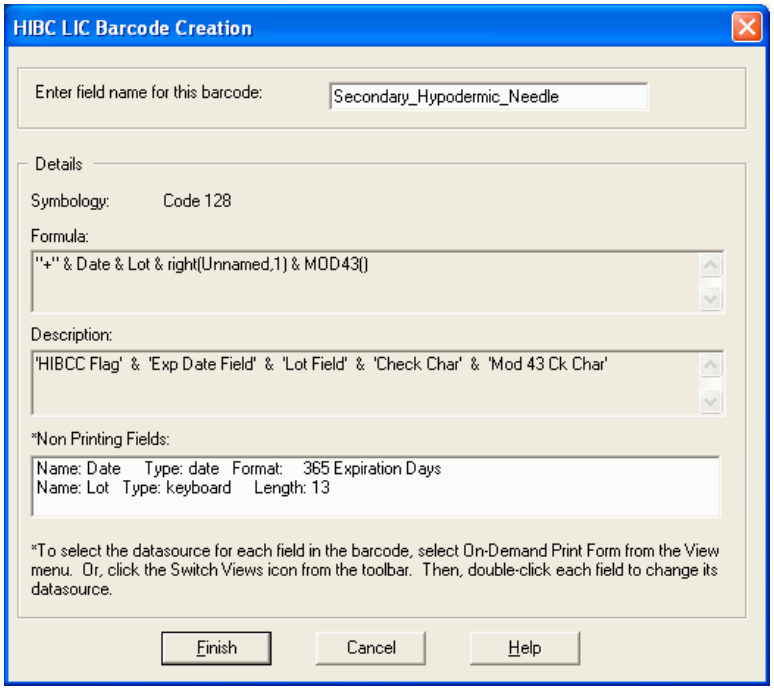


Figure 7-Y: Name Secondary Bar Code Symbology

5. Enter a field name for the Secondary bar code; click **Finish**.

---

*Note: If data is entered from a keyboard or database for non-printing fields, **select** On-Demand Print Form from the View menu, or click on the Customize On-Demand Print icon from the toolbar. Then, **DOUBLE**-Click each field to change its data source.*

The Secondary Bar Code is placed on the upper left corner of the label. Use the mouse cursor, the Properties Box, or the arrow keys to move the new bar code and the human readable field into place below the Primary Bar Code.

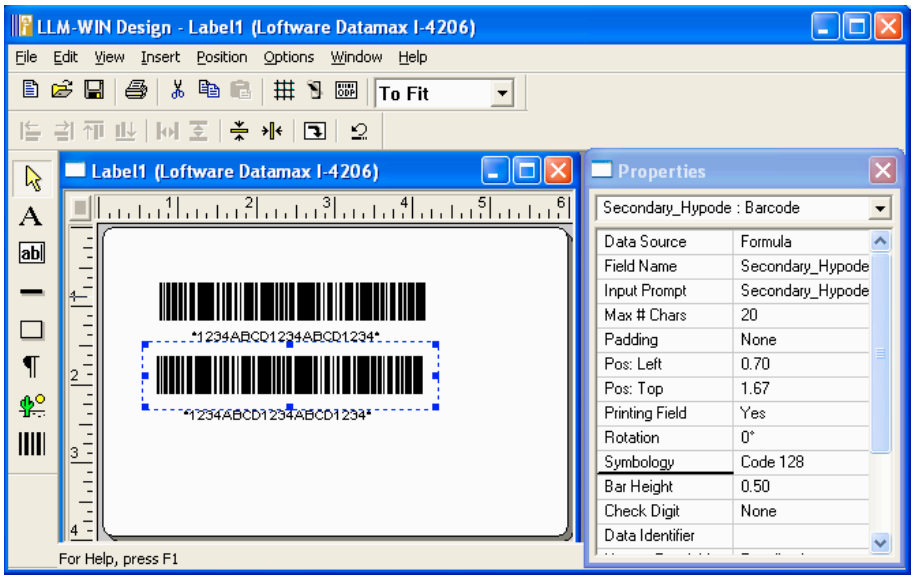


Figure 7-Z: Secondary Bar Code placed on the Label.

UPN Wizard, Part 6: Create LIC Secondary Bar Code with Lot Only

For a product with a secondary bar code and lot only:

1. Select **+$** from the HIBC LIC Secondary Bar Code Creation dialog box; click **Next**.
2. Enter a name for the Lot and a field length; click **Next**.
3. Enter a name for the Secondary bar code; click **Finish**.

---

*Note: If data is entered from the keyboard or database using non-printing fields, select the On-Demand Data Entry form from the View menu, or click on the Switch Views icon from the toolbar. Then, **DOUBLE**-Click each field to change its data source.*

UPN Wizard, Part 7: Creating LIC Secondary Bar Code Using Other Data Formats

1. Select **+$$** (to encode other data structures) from the HIBC LIC Secondary Bar Code Creation dialog box, click **Next**.
2. Selecting **+$$** allows you to include Quantity, Date and/or Lot and Batch Number on your Secondary Label. First, decide if you want to include a Quantity on your label by choosing **Yes** or **No**.
3. Select Yes or No and click **Next**.
   - If No is selected, go to Step 5.
   - If Yes is selected, continue with Step 4.

4. Choose the 2 or 5 digit quantity format you want; click **Next**.

    - Select 5-digits (QQQQQ) if you are not sure which format you want.

5. Enter a name for Quantity; click **Next**.

6. Select Yes or No; click **Next**.

Note: If you did not select Quantity, then the references to that field are not in the Formula, Description, and Non-Printing Fields boxes.

- If No is selected, go to Step 9.
- If Yes is selected, a Date Formula Dialog Box is displayed.

7. Select the date format you want (scroll through the list for more options); click **Next**.

8. Enter a name for the date and the number of days until the product expires; click **Next**.

    - *Example:* If the product expires in one year, or 365 days, enter 365. The date printed on the label is one year from the day the label is printed.

Note: If you did not select Quantity or Date, then the references to those fields are not in the Formula, Description, and Non-Printing Fields boxes.

9. Enter a name for the Lot and a field length; click **Next**.

10. Enter a name for the Secondary bar code; click **Finish**.

Warning! *Bar Codes and human readable fields are not validated on the WYSIWYG screen. TEST print does **not** show your actual encoded data. You must go to a Loftware Label Manager printing application such as, On-Demand, Batch or Range Printing to encode and validate your actual data.*

Templates and Wizards Summary

This chapter has focused on:

- Using pre-made templates from Loftware Label Manager
- Designing new templates for labels
- Utilizing the Loftware Bar Code Wizard to create bar codes
- The GM Wizard
- The UCC Code 128 Bar Code Wizard
- The UPN Bar Code Wizard

Chapter 8 Data Sources

Data Sources - Overview

The Loftware Label Manager allows you to extract data from a variety of sources, including external databases, to help you produce labels exactly the way you want them.

Note: *Block Configuration data source for RFID fields and Keyboard data source, as it applies to RFID fields, are discussed in the RFID chapter.*

Data Sources can be assigned to any “variable” field on the label including text, barcode and image fields. Data sources cannot be assigned to “fixed” text fields, and RFID field values can only be assigned using the "Keyboard" or the "Block Configuration" data source. In addition, while fields added to an RFID label, other than the RFID field (represented by the antenna icon), can obtain values from the data sources described in this chapter, variable text fields added to an RFID tag can obtain their values only from the Keyboard data source. (Refer to the RFID chapter for more information.)

Note: *Refer to the “Concept of Data Push” section of Chapter 1 of the LPS User’s Guide for more insight on data concepts and to the RFID chapter in this User's Guide for information on RFID fields.*

This chapter explains how to get the most out of the Loftware Label Manager’s data source functionality.

To set up or define…	**Use this Data Source…**
A keyboard (Data Entry) field	Keyboard
Character types allowed on input	Keyboard
A database key field with ODBC	Database-Key
Other database fields with ODBC	Database-Data
Database field referencing a file name that contains the data	Database-File
Database field referencing a serial number file to be used for this record	Database-Serial
Key fields for multiple databases	Database-Key
Standard date or time fields	Date/Time
Custom date or time field	Date/Time
Data from a text file	File
Fixed text input	Fixed
Math calculations	Formula

To set up or define…	Use this Data Source…
"Copy-from" other fields	Formula
Combine several fields together	Formula
Add check digits or special functions	Formula
Combine several calculations	Formula
Copy sub-strings from other fields	Formula
Paragraph text	Any Data Source
Creating Serial Number Files	Serial Number
Create formula for HIBC bar code	Formula
Create a formula using non-printing fields	Formula
Increment or decrement a number	Data Source
Character set to use with incr/decr	Increment/Decrement
Increment or decrement and store result	Serial Number
Non-printing fields	Specify its Data Source, and then set its Printing Field property to "No."
RFID fields	Block Configuration Keyboard
Variable Images from Database	Database-Data
UCC Code 128 Bar code	UCC Wizard
UPN Healthcare Bar Codes	UPN Wizard

With Data Sources, you can:

1. Identify the source (e.g. database) from which the Loftware Label Manager obtains the data that is included on a label.

2. Control what a user can enter on a label when preparing a print run using an On-Demand Print Form.

Data sources can be defined for any variable field, text, bar code or image. The default data source for all fields other than image is "Keyboard," which assumes direct user input for the data at print time (e.g., a data entry station on the shop floor). The default data source for image is "Fixed."

Accessing a Data Source

The Data Source is an important part of defining a label.

To access the Data Source dialog box:

- Double click on the field for which you want to define the data source. Alternatively, right click on the field and select **Edit Data Source** from the pop-up menu. You can also click on the ellipsis button next to the Data Source property in the property box.

This displays the Data Source dialog box which lists available data sources. The right side contains the information to set up the selected data source. As you select different Data Sources, the information on the right side changes to display information specific to the selected Data Source.

Non-RFID Field Data Source List

- Keyboard (default)
- Databases (Key, Data, Serial Number and File)
- Date/Time
- File
- Fixed
- Formula
- Increment/Decrement
- Serial Number

RFID Field Data Source List

- Keyboard
- Block Configuration.

Keyboard Data Source

The Keyboard Data Source is used for fields that get their data from the On-Demand Print Form, ActiveX Control, the Loftware Print Server (LPS), or the Batch Print utility. For keyboard fields, you must define "rules" for the user to follow when entering data .

Note: For RFID fields using the Keyboard data source, data must be in hexadecimal format.

Options for Keyboard Data Source

Note: *Some of the following parameters may not apply to LPS and ActiveX/.NET controls.*

Entry Type - Define the entry as Optional, Must Fill or Mandatory.

- *Optional* (default) - Allows the user to make an entry in the field or bypass the field.
- *Must-Fill* - Requires the user to make an entry in the field that matches the maximum number of characters specified in the properties box for that field.
- *Mandatory* - Requires the user to make an entry in the field but allows any number of characters up to and including the maximum number of characters specified in the properties box.

Update Method and Clear Value - The Update Method instructs the Loftware Label Manager what to do after a label is printed.

- *Clear* (default) - Clears the field after a label is printed. The field is cleared to whatever is in the Clear Value field. By default, the field is cleared (set to "Blank"), but you can assign a Clear Value later in the dialog box (e.g., you may want to have a "Pack Quantity" field clear to a standard pack quantity of 100). The Clear Value field is only active if the Update Method is set to Clear.

- *Remember* - Retains the user input data for successive print runs of the same label. For example, if the packer number is displayed on a label and the same packer is responsible for several print runs of the same label, there is no need for the packer to re-enter "Packer Number."
- *Remember Across Labels* - Retains the user input data across successive print runs of the same or different labels. If the packer number is displayed on several different labels and the same packer is responsible for printing these labels over time, there is no need for the packer to re-enter "Packer Number" for each print run. (See the tip that follows.)

A "Lights the Way" Tip

Remembering Data Across Labels

- Each label to be printed must have a field with the same name (e.g., "Packer").
- Assign a Keyboard data source for each field.
- Set the field as *Remember Across Labels* on each label format.

Character Mask and Custom Mask - Character Mask allows you to define or limit the types of characters the user may enter. Note that for RFID fields, the only choice is *Hexadecimal*.

- *None* (default) - Enter any keyboard character.
- *Alphanumeric* - Enter upper or lower case alphabetical characters (A through Z, a through z) and numeric digits (0 through 9).
- *Alpha Only* - Enter upper or lower case alphabetical characters (A through Z, a through z) only.
- *Code 39* – Enter characters in the Code 39 ASCII character set.
- *Code 93* – Enter characters in the Code 93 character set.
- *Custom* - Specify exactly which characters the user can enter in the Custom Mask field. Custom allows you to create your own character masks.
- *Full ASCII* - Enter any character (in the Code 39 extended ASCII character set). [See Appendix C in the Advanced User's Guide.]
- *Hexadecimal* - Enter hexadecimal digits (0 through 9, A through F) only. For RFID fields, this is the only accepted choice.
- *Numeric-Only* - Enter numeric digits (0 through 9) only.
- *UCC* - Enter numerals, spaces, or parentheses only. For building UCC-128 SSCC or UCC-128 Generic Bar Codes.
- *UCC-128* - Enter numerals, spaces, parentheses, or alphabetic characters only. For building UCC-128 SSCC or UCC-128 Generic Bar Codes.

- *Uppercase Alphanumeric* - Enter uppercase alphabetical characters (A through Z) and numeric digits (0 through 9) only.
- *Uppercase Alpha-Only* - Enter uppercase alphabetical characters (A through Z) only.

Custom Mask Examples

Custom masks are not available for RFID fields.

Example 1: (Custom Character Mask)

You have a production line field for which the valid values are 1, 2, 3 or 4. To create the appropriate character mask:

1. Select Custom as the Character Mask type.
2. Type **1234** in the Custom Mask field.

Example 2: (Custom Character Mask)

You want to let the user type a decimal point and a number anywhere in the field (e.g. 1.235 or 123.5). To create the appropriate Character Mask:

1. Select Custom as the Character Mask type.
2. Type **1234567890** in the Custom Mask field.

Be sure to enter a decimal point.

Note: *The Custom Mask field is only active if the Character Mask is set to Custom.*

Help Text - The Help Text field allows you to enter a customized prompt that is displayed in the Status Bar (at the bottom of an On-Demand Print Form to assist the user in data entry. For example, for a "User ID" field, you might want to add the following help text:

ENTER 4-digit employee ID number

Whenever the cursor is moved to this field in On-Demand printing, this customized help string is displayed in the status bar.

Block Configuration Data Source

The Block Configuration data source is used to specify values for RFID block fields. It allows selection of RFID tag type, EPC/DoD data structure, and the EPC/DoD encoding type.

Block Configuration data source for RFID fields and the fields available on the Block Configuration dialog are discussed in the RFID chapter.

Date and Time Data Source

The Date/Time data source allows entry of the print date and time on a label in a variety of formats.

Important: *The print date and time reflect your computer system's current date and time at the time of printing, which is tracked by your system's internal clock/calendar. Thus, if you plan to print "Expiration Date" using the Date/Time function, you must calculate the expiration date based on the date the item is labeled and shipped. For more detailed information, please see the section below regarding calculating the expiration date. You may also use keyboard entries in a variable text field to enter any date desired on your labels.*

Date/Time Data Source fields have the following options:

Format Dates and Times - Select from a list of predefined Date/Time format options. As you choose a format, a sample date or time is shown in the sample field.

Custom Dates and Times - You can, if you wish, create your own custom Date/Time options or customize one of the predefined format options, using this key:

Key code…	**Means ...**
d	day
ddd	day (e.g. Tues)
dddd	day (e.g. Tuesday)
h	hour
mm	minute (or month)
mmm	month (e.g. Mar)
mmmm	month (e.g. March)
ss	second
yy	year
WW	week number (e.g., Jan 1 through 7 = Week 01)
JJJ	day no. (Julian calendar, e.g., Jan 1 = Day 001)
AM/PM	time AM or PM indicator is to print
Here are a few examples of the versatility of the Date/Time option:	
Custom Format ...	**LLM prints the date and/or time as...**
d-mmm	27-Mar
d-mmm-yy	27-Mar-00
ddmmyy	270300
h:mm:ss	3:01:03 PM
m/d/yy	3/27/00
h:mm "EST"	15:01 EST

Note: *You can also add literal text to a format by enclosing text in quotes.*

Single-Digit Date Formats - To set the single-digit option, in Design Mode, select Options | Preferences. Under the Design Options section, select one or more of the single digit date options. When a single-digit date option is enabled, any date over one digit is represented by the first letter of the alphabet, thus the 10th month is represented by an A, the 11th month B, the 15th day F, etc. See the following figure and table for examples.

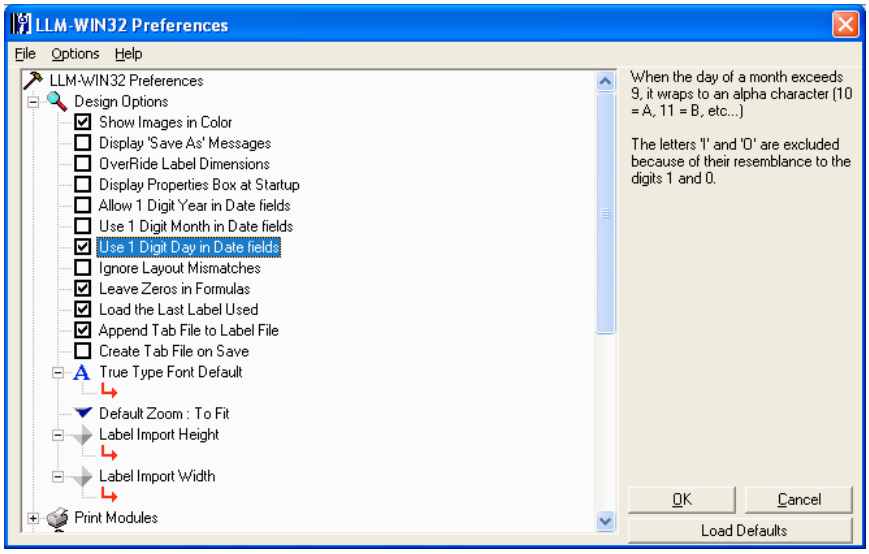


Figure 8-A: Setting Single-digit Day, Month, Year

Custom Date String	Date...	Single Digit date
m/d/y	11/27/02	B / R / 2
y-m-d	99-12-31	9 - C - V
d_m_y	7_26_03	Q_7_3
mmm-d	Oct. 20	A-K

Add and Delete Buttons - If you want to add your custom format to the list of available formats for future use, click the **Add** button. This action adds the new entry to your list of formats. You can use the delete button to delete any of your custom formats. You cannot delete the predefined formats.

Calculate Expiration Date - If you require an expiration date calculation, enter number of days to be added after the date is retrieved from your system's internal clock. Please note that the day the label is printed should be the same day the item is shipped.

File Data Source

The File Data Source directs Loftware Label Manager to retrieve the data for the selected field from the specified text file. For example, if you prepare labels for pharmaceutical products,

chemicals or hazardous substances, your labels may require “Warning” or “Special Handling” messages.

Using text files to store these warning messages allows you to update an external text file and have it reflected in the next print run without having to change every label that contains the message.

To use the File Data Source, type in the name of the text file to use or use the Browse button to search for the file. The file data source is used primarily for importing large amounts of data into a single field on your label.

The file data source works very well with paragraph fields since paragraphs can automatically wrap data to the next line. Two-dimensional Bar Codes are also examples of fields that may require a file data source.

Note: *To supply the data for all variable fields from a comma-delimited file (i.e. a multiple record “batch” file), refer to the Batch Printing section in this guide and to the ActiveX Control chapters of the LPS User’s Guide.*

Fixed Data Source

As implied by the name of the data source, the data is “fixed” - it remains the same across all labels. For text fields, using the Fixed Data Source with a variable text field is similar to using the Fixed Text Tool. For Bar Codes and images, using the Fixed Data Source is the only way to the field’s data fixed. To use the Fixed Data Source, type in the text to use for the field data. Fixed data does not show up on the On-Demand Print Form, but will show up on the printed label.

Formula Data Source

The Formula Data Source is one of the most powerful and versatile features of the entire Loftware Label Manager system. Using formulas, you can:

- Perform math operations and print the result on the label
- Copy data from another field and incorporate it into the selected field
- Combine data from two or more fields (using the combine operator “&”
- Create special field setups (e.g., Code 128 functions, special check-digit capability)
- Use the quantity of labels printed as data to create n of m labels (e.g. 1 of 20, 2 of 20, etc. where the value is the quantity of labels entered by the user). (See Knowledge Base article #42736 on the Loftware Website.)
- Perform string manipulations (e.g., left, Part_Number, 10) extracts the first 10 characters of the data in the “Part_Number” field)
- Combine any or all of the above functions in a single field
- Use formulas that use the results of other formulas. (Loftware Label Manager automatically calculates all dependent fields first.)

Loftware Label Manager uses spreadsheet-like syntax for its formulas. If you are an experienced spreadsheet user, you can type formulas in manually. However, to make it easier to tap the full

power of Loftware Label Manager's formulas, the Formula Data Source dialog box has a Formula Assistant.

This section provides a general overview of how to take advantage of Loftware Label Manager formula features. It is useful to experiment and practice with your own formula combinations to discover the functions that work best for your own applications.

A "Lights the Way" Tip

The Importance of Meaningful Field Names, Part II

Giving your fields a meaningful name makes it easier to work with formulas.

Example1: The formula (Gross_Weight – Tare Weight) / Piece_Weight is much easier to understand than (TXT0000 – BAR0001) / BAR0002.

Example2: Building a complete name string out of three input fields is easier to read as: *FirstName & "" & Middle Initial & "" & LastName*

Creating a Formula

Loftware Label Manager provides two basic methods for creating formulas:

1. Type the formula directly into a text box (similar to typing a formula into a spreadsheet).
2. Use Loftware Label Manager's "Formula Assistant" capability, which allows you to build your formulas from lists of field names, operations (e.g., mathematical calculations) and functions.

You can also combine both methods when creating a formula.

Using the Formula Assistant

The Formula Assistant consists of three columns:

- **Fields:** A list of all of the variable fields on the label that you can include in the formula. Any non-printing fields that you may have dropped on the custom operator input screen also show up in this list.
- **Operations:** The mathematical operators and string functions you use in conjunction with fields.
- **Functions:** A list of special bar code functions, check digits and system values.

Using the Formula Assistant, you can build a formula by pointing and clicking on Field Names, Operations and Functions. Creating Loftware Label Manager formulas using simple point-and-click methods is an easy process.

Mathematically adding Two Fields Together

1. In the list of Fields, click on the name of the first field you wish to include in the formula. (Note that the field name is displayed in the formula edit box.)
2. In the list of Operations, click on the "+"sign. (It is displayed in the text box, following the name of the first field.)
3. Return to the list of Fields and click on the next field that you wish to include in the formula.

You can use point-and-click methods to create virtually any combination of fields and calculation for a formula.

Note: *Loftware Label Manager does not require you to use point-and-click techniques to create formulas. If you wish, type your formulas directly into the text box using regular keystrokes.*

Formula Examples

The following table provides four examples of Loftware Label Manager's **Formula Assistant** capabilities:

If you want to ...	**Then ...**
Combine text from two or more fields	Select each field by name and separate field names with the Combine operator (&). *Example:* FirstName & " " & LastName
Perform basic mathematical functions	Select each field by name, separated by functions using values from the appropriate mathematical symbol selected fields. (*, -,+, /). Use parenthesis to override normal math precedence. *Example:* (GrossWeight - TareWeight) / PieceWeight
Copy data from another field.	Enter the field name of the field you want to copy from in the formula. *Example:* Copy from the PackType field. Example: PackType
Copy part of another field	Use the LEFT(), MID() or RIGHT() string functions.
Example:	
LEFT(Description,10)	Copy from the first 10 characters of the Description field.

Note: *Additional formula examples are available at the end of this chapter.*

The "Formula Assistant's" Operators and Functions

Loftware Label Manager uses standard spreadsheet type operators and string functions. These are documented below and grouped by functional category.

Mathematical Operators

Operators	**Description**
*	Multiplies the values of two selected fields.
/	Divides one field by another.
+	Adds the values of two selected fields.
-	Subtracts the value of a field from the value of the previous field.
( )	Parenthesis is used to override normal math precedence.

String Functions

Function	Description
Combine (&)	Concatenates the values of two strings or fields of data. Syntax: “fixed_string” & field_name or field_name & “fixed_string” *Example:* Concatenate a text field TXT001 with a fixed string “1234”. TXT001 & “1234”
Copy-From	Copies the contents of one field into a secondary destination field. Syntax: CopyFrom(fieldname) *Example:* Copy the contents of field BAR001.CopyFrom(BAR001)
Fixed String	Inserts a fixed string of characters within a formula. (Is displayed in text field as “ “.) Syntax: `"fixed string"` *Example:* Create a fixed string with the characters “Loftware” “Loftware”
Left-Pad	Pads stated character onto the beginning (or leftmost side) of the field. Syntax: `lpad ('pad_char', max_width, fieldname)` pad_char: character to be padded into printed field max_width: maximum total size of field to print including padded characters fieldname: the field to extract data from *Example:* Pad the character L onto the leftmost side of the field TEXT0000, making the printed field eight characters long. LPAD(‘L’,8,Text0000)
Left-String	Returns the first (or leftmost) character or characters from the selected field. Syntax: `left(fieldname, num-chars)` fieldname: the field to extract data from num-chars: the number of characters to copy *Example:* Returns the first (or leftmost) four characters from the selected field TEXT0003. LEFT(Text0003,4)
Left-Trim	Removes stated characters from the beginning (or left most side) of the field. Syntax: **`ltrim('trim character',fieldname)`** **trim_char:** character to be trimmed from field f**ieldname:** the field to extract data from. *Example:* Removes all consecutive occurrences of the character N from the leftmost side of the field TEXT0002. LTRIM(‘N’,Text0002)
Mid-String	Returns a specific number of characters from the selected field, starting at the position you specify. Syntax: **`mid(fieldname, start_pos, length)`** **fieldname:** the field to extract data from **start_pos:** is the position of the first character you want to extract. The first character in a field has start_pos 1 and so on. **length:** the number of characters to copy. *Example*: Extract 10 characters from the Description field, starting at the fifth character. **MID(Description, 5, 10)**
Parenthesis	Inserts a set of parentheses into the formula. You can CLICK the mouse inside the parenthesis to enter more operations into the parenthesis. Note the text cursor autopositions inside the parenthesis.
Right-Pad	Pads stated character onto the end (or rightmost side) of the field. Syntax: **`rpad ('pad-char',max-width, fieldname)`** **pad_char:** character to be padded into printed field **max_width:** maximum total size of field to print including padded characters **fieldname:** the field to extract data from

Right-String	Returns the last (or right most) character or characters from the selected field right (the field to extract data from, the number of characters to copy)Syntax: **`right (fieldname, num-chars)`**. **fieldname:** the field to extract data from **num-chars:** the number of characters to copy. *Example:* Returns the last (or right most) three characters from the selected field **TEXT0004. RIGHT(Text0004,3)**
Right-Trim	Removes stated characters from the end (or rightmost side) of the field. Syntax: rtrim('trim character',fieldname) **trim_char:** character to be trimmed from field **fieldname:** the field to extract data from *Example:* Removes all consecutive occurrences of the character 1 from the rightmost side of the field TEXT0003. **RTRIM('1',Text0003)**

Special Functions

Loftware Label Manager contains some special functions for advanced applications. They are described briefly here.

Function	Description
ASCII CR	Inserts a carriage return. (Decimal and Hex values)
ASCII CRLF	Inserts a carriage return line feed (Decimal and Hex values)
ASCII EOT	Inserts an end of transmission (Decimal and Hex values)
ASCII GS/FS	Inserts separator characters, common in Maxi-Code (Decimal and Hex values)
ASCII HT	Inserts a tab character (Decimal and Hex values)
ASCII LF	Inserts a line feed (Decimal and Hex values)
Code128: Code A	Upper alpha, numeric and ASCII function calls.
Code128: Code B	Upper and lower case alphanumeric.
Code128: Code C	Numeric only.
Code128: Code UCC	Makes a standard Code 128 bar code with a Subset C and Function 1.
Code128: FNC1	Inserts a Function 1 character into the bar code.
Code128: FNC2	Inserts a Function 2 character into the bar code.
Code128: FNC3	Inserts a Function 3 character into the bar code.
Code128: FNC4	Inserts a Function 4 character into the bar code.
Code128:Shift	Inserts a Code 128 Shift character for switching subsets
Duplicates()	The field uses the number of duplicate labels to be printed, entered at print time, as its data.
Link check character	Inserts a Link check character into the bar code. Both the HIBC LIC Standard data structures and the HIBC UCC/EAN Primary field employ a Link Character for additional data security
Mod10()	Inserts a Modulus 10 check character based on all of the preceding digits in the field.
Mod43()	Inserts a Modulus 43 check character based on all of the preceding characters in the field.

Mod7()	Inserts a Modulus 7 check character based on all of the preceding digits in the field.
Quantity()	The field uses the number of labels to be printed, entered at print time, as its data. *Example:* In conjunction with an incrementing field, you can use this feature to build a label counter (e.g. 1 of 5, 2 of 5, etc.) where the "of" count automatically matches the number of labels printed.
UCCMod10()	Inserts a Modulus 10 check character based on the preceding digits, back to, but not including, the Application Identifier. Using this function allows multiple UCC128 data fields to be combined in a single bar code.
Examples	
A field has the data: (00) 00100 28028 99999999 & UCCMOD10()	The first UCCMOD10() function calculates a Mod 10 Check Digit for the data back to but not including the (00).
(01) 9323403 & UCCMOD10()	The second UCCMOD10() function calculates a Mod 10 Check Digit for the data back to but not including the (01).
*Inserts the specified Code 128 function into a bar code field. Text fields ignore this function. The function commands behave differently for different printers. Consult Loftware Label Manager Online Help for specific information pertaining to your printer and examples of different Code 128 applications.	

Other Formula Examples

The following example shows the power of formulas in setting up a complex HIBC bar code.

In practice, you are better off using the UPN Healthcare Bar code Wizard. The Wizard builds the formula for you as it guides you through the specification.

Note: *Also see the Templates and Wizards chapter for information on Wizards if you are dealing with GM, UPN, HIBC or UCC Bar Codes. It saves you a lot of time and headaches!*

Creating an Application Using HIBC Bar Codes

Using the Loftware Label Manager Formula Data Source enables you to build complex label formats such as those used in HIBC (Health Industry Business Communications Council) applications.

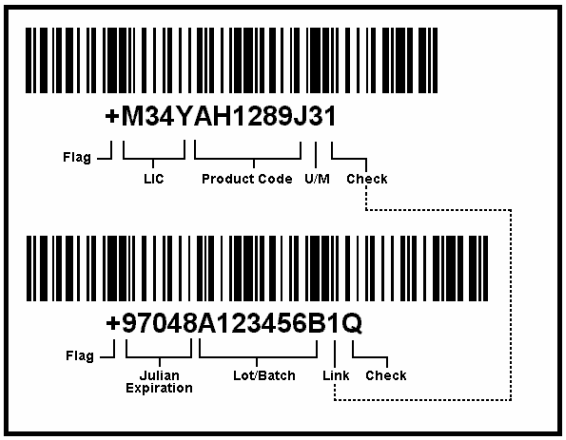


Figure 8-B: HIBC Label with Primary and Secondary Bar Codes

In the previous example, the label format contains two Bar Codes that are linked by a check digit character. These Bar Codes can be set up as either Code 39 or Code 128 symbology. These example labels (HIBC_128.LWT and HIBC_39.LWT) are provided in the Loftware Label Manager general template directories. To use this feature:

1. Set up the CheckDigitManually options in the parameter file, (Preferences instructions) LLMWDN32.INI file. This forces the check digit to be calculated by Loftware instead of the printer.

2. Create a variable bar code named PRIMARY. This is your primary bar code. The primary bar code must be long enough to hold your Labeler Identification Code (LIC), your Product Code and your Unit of Measure. (Refer to Chapter 3 for more information about creating variable fields, and the On-Demand Printing chapter about creating variable non-printing fields).

3. Create a variable bar code named SECONDARY. This is your secondary bar code. The secondary bar code must be long enough to hold your Expiration and Lot/Batch information.

Creating HIBC Formulas

From our example label, the formulas for the HIBC Bar Codes look like:

Primary Bar code (PRIMARY):
"+M34YAH1289J3"& MOD43()

Where:	
"+M34YAH1289J3"	Is a fixed string containing your information. (This data could be taken from variable field using a non-printing field.)
mod43()	Calculates the modulus 43 checkdigit for the primary bar code.

Secondary Bar code (SECONDARY):
"+97048A123456B"& right(PRIMARY,1) & MOD43()

Where:	
“+97048A123456B”	Is a fixed string containing your information. (This could be taken from variable field using a non-printing field).
right(PRIMARY,1)	Takes the rightmost character of PRIMARY (which is the check digit) and adds it to SECONDARY. You can access this string function by double-clicking on the “right-string” function.
mod43()	Calculates the modulus 43 checkdigit for this bar code (the secondary bar code).

Increment/Decrement Data Source

The Increment/Decrement (Incr/Decr) Data Source allows you to print increasing or decreasing values in a field (Increments or Decrements). The starting value for each print run is entered by the user at print time or it is set using a “clear to” value. The difference between this data source and the ‘Serial Number’ data source is that the Serial Number data source “remembers” the last value printed in a file. This value can be shared among different labels. Serial files can also be shared ‘System Wide’ across a network. Be sure that you understand both data sources before choosing one.

Extended Mode vs. Native Mode

Most thermal transfer printers have the capability of incrementing or decrementing data in the printer’s firmware. This allows the printers to print much faster than having to send a different label (with the incremented value) each time a field has to be incremented. The Loftware Label Manager Design mode allows you to set up any incrementing situation you need. For example, the incrementing scheme may be alphanumeric, or may be embedded in a formula.

The printing subsystem evaluates the nature of your increment/decrement request to see if the printer is able to handle it internally. If the answer is yes, the job is sent to the printer and the printer is told to increment between labels. This scenario is called ‘Native Mode.’ If it is determined that the printer cannot handle the request, the printing subsystem performs the incrementing for the printer and sends the new data for each label. This is called ‘Extended Mode’ and is much slower than Native Mode.

Rule of Thumb - If a formula is a “copy from” field and is inc/dec or serial, it is printed natively. If you have a formula which is concatenated with an inc/dec or serial field, it is printed in Extended Mode.

When the Number ‘Wraps’

You should provide enough zeros during your print run so that the incrementing number increments through significant digit positions before “rolling” back to zero. For example, a starting number of 00 increments through 99 before wrapping back to 00. A starting value of 000 wraps at 999 and so on. You may trim the leading ‘0’ using the L-Trim formula function on a non-printing field that you have defined as incrementing. Be advised that doing this may force the printer into the slower “extended” mode.

Options for the Increment/Decrement Data Source

Type - Type allows you to select Increment (count up) or Decrement (count down).

Mode & Custom Sequence - This function allows you to specify the character set used to Increment or Decrement.

When you select ...	Loftware Label Manager...
Numeric-Only (default)	Increments/Decrements an integer counter. *Example:* 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, ...
Uppercase Alphanumeric	Increments/Decrements an alphanumeric counter. *Example 1*: AA8, AA9, AAA, AAB… *Example 2*: AZX, AZY, AZZ, B00, B01, B02…
Uppercase Alpha-Only	Increments/Decrements an alpha-only counter. *Example 1:* AAA, AAB, AAC, AAD, ... *Example 2:* AZX, AZY, AZZ, BAA, BAB, BAC…
Hexadecimal	Increments/Decrements a hexadecimal counter Example 1: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F, 10, 11, 12..
Custom	Specifies exactly which characters to use in the increment / decrement sequence.

If you choose to create a Custom increment/decrement sequence, you must enter the allowed characters in the Custom Sequence field.

Example: (Custom Inc/Dec Definition)

If you want to feature an alphanumeric field without the letters I, O, S and Z (to avoid possible confusion with the numerals 1, 0 and 5). Select Custom; select the Custom Sequence text box and type in the desired custom sequence:

0123456789ABCDEFGHJKLMNPQRTUVWXY

(The above example eliminates I, O, S and Z).

By Value - Sets the interval by which the field increments or decrements at print time.

Update Method and Clear Value - The Update Method instructs *Loftware Label Manager* what to do after a label is printed.

When you select ...	Loftware Label Manager...
Clear (default)	Clears the field after a label is printed. The field is cleared to whatever is in the Clear Value field. By default, the field is cleared (set to "Blank"), but you can assign a Clear Value later in the dialog box. The Clear Value field is only active if the Update Method is set to Clear.
Example:	Create a box counter (1 of x, 2 of x) that always starts at 1. Use the Clear update method and set the Clear Value to 1.
Update to Next Value	Sets the field to the next available value in the sequence. Use this option to create a continuing series of labels.
Reset to Original Value	Resets the "counter" to the starting value entered by the user.

Help Text (Inc/Dec) - The Help Text field allows you to enter a custom prompt that is displayed in the Status Bar (at the bottom of an On-Demand Print Form to assist the user in data entry.

Serial Number Data Source

If Serial Numbers are an integral part of your company's operation, please read the following:

Most thermal transfer printers have the capability of serializing data in the printer's firmware. This allows the printers to print much faster than having to send a different label request (with the incremented value) each time a field has to be incremented. The *Loftware Label Manager* Design mode allows you to set up many serial number schemes. For example, the serialization scheme may be alphanumeric, or may be embedded in a formula. The printing subsystem evaluates the nature of your serial number request to see if the printer can handle it internally. If the answer is yes, the job is sent to the printer and the printer is told to increment between labels. This scenario is called 'Native Mode.' If it is determined that the printer is not able to handle the request, the printing subsystem must perform the incrementing for the printer and send the new data for each label. This is called 'Extended Mode' and is much slower than Native Mode.

The Serial Number option is similar to the Increment/Decrement option, but the serial number offers these additional features:

- Serial numbers are stored in files and remembered from one print session to another.
- Serial numbers when used in conjunction with the LPS are never repeated; however, if a job does not print or is restarted, the serial numbers that did not print are skipped.

  Example: Serial number starting at 000. If 50 labels are printed and the job is restarted after 25 labels, the LPS restarts printing with serial number 076.
- Serial numbers can be attached to more than one label, i.e., several labels can share a common sequence.
- Serial numbers can be local; specific to the PC that is being used to print labels or shared by multiple users on a network.
- Serial file names may be specified in a database so that you can select which Serial file pertains to which part number.

***Note**: Please make sure you read and understand the 'Extended vs. Native Mode' and 'When the number wraps' sections from the Increment/Decrement data source. They apply to Serial as well.*

Create a Serial Number File: Example

Assume that you are labeling cartons of "Router Blades," and you have two types of customers to whom you must ship the blades: "Wholesalers" and "Retailers." Your wholesalers and retailers require two completely different labels, but you want the product serial numbers (production lot number) to appear sequentially, regardless of which label you are printing. Follow these steps:

1. Create a serial number file to contain the router blade production lot number, call it ROUTER.
2. Design the wholesaler label and attach it to the ROUTER serial number.
3. Design the retail label and attach it to the ROUTER serial number.

You assign the same serial number file to each label and Loftware Label Manager begins each print run with the next available value regardless of how many print runs occur and how many different labels use this serial number.

Creating a Serial Number File

Note: *You should provide enough leading zeros when setting your serial number file up so that the incrementing number increments through significant digit positions before "rolling" back to zero. For example, a starting number of 00 increments through 99 before wrapping back to 00. A starting value of 000 wraps at 999 and so on. You may trim the leading 0' using the L-Trim formula function on a non-printing field that you have defined as incrementing. Be advised that doing this may force the printer into the slower "extended" mode.*

1. Select the field on a label that is attached to the **Serial Number file**.
2. Edit the Data Source; select the **Serial Number Data Source**.
3. In the Serial Number setup dialog, press **New**.
4. Enter a name for the Serial Number file (e.g. FORD).
5. Tab to the Description box and type a brief description of the file.
6. Specify the **Type, Mode, Custom Sequence** (if applicable) and **By Value**. These attributes are the same for the Incr/Decr fields.
7. Set the Length of the serial number; enter a **Start Value**; press **OK**.

Note: *If you need to create more than one Serial File, we suggest you do it here by following the above procedure multiple times.*

Changing an Existing Serial Number File

1. Select the field on a label that is attached to the Serial Number file.
2. Edit the Data Source.
3. Select the Serial Number Data Source.
4. Select the Serial Number you wish to change, press the **Edit** button.
5. Change the serial number setup as desired, press **OK**.

Warning!! *Changing an existing serial number file affects any subsequent printing for all labels which reference that serial number. Changes to serial number definitions should be done with extreme caution!*

Also, the Loftware Sample Serial Files are samples only, and are not intended for a production label. Problems when upgrading can occur if they are used in a production environment.

If you are moving your Loftware Label Manager installation from one PC to another, make SURE to either move the serial file, or set up the serial number file on the new PC.

Options for the Serial Number Source

Display on ODP Form (Serial #) - Check this option if you want the field displayed on the On-Demand Print Form. The current value of the serial number file is displayed on the On-Demand Print Form but cannot be changed.

Note: *If several users are centrally sharing a serial number using a network, the current value of the serial number may change before labels are printed (if another user prints labels after the label is loaded but before it is printed). If this happens, the user is notified that the starting value has changed.*

Help Text (Serial #) - The Help Text field allows you to enter a customized prompt that is displayed in the Status Bar (at the bottom of an On-Demand Print Form) to assist the user in data entry.

Database Data Source

Using databases can greatly simplify the printing process and eliminate the chances of data entry error. In a typical application, the user enters a key piece of information (e.g. a part number) and Loftware Label Manager retrieves other data for the label based on the key.

For every database table that is connected to a label, one field (and only one) must be identified as the key field. This means that the key field is used to look up data information from the database.

The Database Data Sources and ODBC

Loftware Label Manager features 32-bit ODBC (Open Database Connectivity) functionality. This allows Loftware Label Manager to retrieve information from database applications supporting the ODBC standards.

In order to use a database with Loftware Label Manager, you must first register it with ODBC. (**Start>Program Files>Loftware Labeling>Data Sources (ODBC**) For help on registering databases with ODBC, see the Windows Control Panel or Appendix A (ODBC) of the User's Guide or the Knowledge Base on Loftware's Website.

Using Multiple Databases

Loftware Label Manager allows you to attach as many different databases to the label as you want. For example, you might attach to the shipping database for “ship to address” information and to the product database for product information such as weight, description, color, etc. Refer to Online Help or Loftware’s Website under Knowledgebase for examples and details.

Using Different Key Fields for Each Database Connection

When you attach multiple databases to a label, each database must have a key field so that Loftware Label Manager knows what information to retrieve from each database. In the example above, you might set up two separate database connections, each with their own key field. In this case, this creates two unrelated database “lookups” by typing a Customer name and retrieving the ship to address and then entering a part number and retrieving the product information.

Using the Same Key Field for Multiple Database Connections

Other applications may require a label to be attached to two separate databases that used the same key field. For example, a label might retrieve some product information from a "product structure file" using a part number and then look up the "on-hand" balance from an inventory file, also using the part number. Loftware Label Manager can handle this case as well by making the key field for the second database Copy-from the key field of the first database. This is done using the Database-Key data source dialog boxes Get Value from/Copy from function.

Using Data from One Database as the Key to Another Database

In yet a third application, you may have a situation where you need a relational lookup - where data that was returned from the initial lookup is used as a foreign key into a secondary database. This can be accomplished by defining a secondary Database-Key field and then setting the **Get Value From/Copy From** value as one of your Database-Data fields.

For an example of a relational lookup, let us assume that we have a part number database (such as LESSON2.DBF in the LLMWIN/DBASES directory). This database contains information - stock numbers, description, UPC number, finish, etc. - pertaining to the stock item. If another field was added, such as Customer Number, this database could be relationally linked to another, different database containing comprehensive company address information.

LLM's Four Types of Database Connections

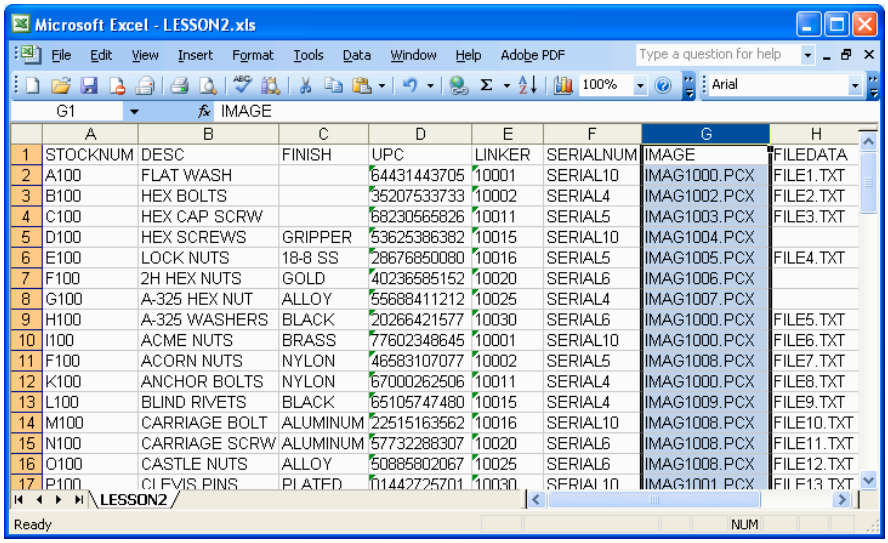
Loftware Label Manager has 4 different types of connections you can make to a database:

- Database-Key
- Database-Data
- Database-Serial
- Database-File

Database-Key and Database-Data are the connections that every database user uses and they are described here. Database-Serial and Database-File are advanced connections and they are discussed later in Advanced Data Source Topics.

If you wish to include image names for a variable image field in your database, you must specify the name and extensions (e.g., BOLT.BMP). Do not specify a path because the default Images directory is assumed. See **Options | File Locations** to change the default image directory.

The sample screen that follows depicts a database calling out an image file name:



	A	B	C	D	E	F	G	H
1	STOCKNUM	DESC	FINISH	UPC	LINKER	SERIALNUM	IMAGE	FILEDATA
2	A100	FLAT WASH		64431443705	10001	SERIAL10	IMAG1000.PCX	FILE1.TXT
3	B100	HEX BOLTS		35207533733	10002	SERIAL4	IMAG1002.PCX	FILE2.TXT
4	C100	HEX CAP SCRW		68230565826	10011	SERIAL5	IMAG1003.PCX	FILE3.TXT
5	D100	HEX SCREWS	GRIPPER	53625386382	10015	SERIAL10	IMAG1004.PCX	
6	E100	LOCK NUTS	18-8 SS	28676850080	10016	SERIAL5	IMAG1005.PCX	FILE4.TXT
7	F100	2H HEX NUTS	GOLD	40236585152	10020	SERIAL6	IMAG1006.PCX	
8	G100	A-325 HEX NUT	ALLOY	55688411212	10025	SERIAL4	IMAG1007.PCX	
9	H100	A-325 WASHERS	BLACK	20266421577	10030	SERIAL6	IMAG1000.PCX	FILE5.TXT
10	I100	ACME NUTS	BRASS	77602348645	10001	SERIAL10	IMAG1000.PCX	FILE6.TXT
11	F100	ACORN NUTS	NYLON	46583107077	10002	SERIAL5	IMAG1008.PCX	FILE7.TXT
12	K100	ANCHOR BOLTS	NYLON	67000262506	10011	SERIAL4	IMAG1000.PCX	FILE8.TXT
13	L100	BLIND RIVETS	BLACK	65105747480	10015	SERIAL4	IMAG1009.PCX	FILE9.TXT
14	M100	CARRIAGE BOLT	ALUMINUM	22515163562	10016	SERIAL10	IMAG1008.PCX	FILE10.TXT
15	N100	CARRIAGE SCRW	ALUMINUM	57732288307	10020	SERIAL6	IMAG1008.PCX	FILE11.TXT
16	O100	CASTLE NUTS	ALLOY	50885802067	10025	SERIAL6	IMAG1008.PCX	FILE12.TXT
17	P100	CLEVIS PINS	PLATED	01442725701	10030	SERIAL10	IMAG1001.PCX	FILE13.TXT

Figure 8-C: Database calling out an image file name

Database-Key

Note: *The Loftware Label Manager subsystem uses ODBC (Open Database Connectivity) to access external databases. See Appendix A for information on how to connect to your database using ODBC.*

When you wish to retrieve information from a database, Loftware Label Manager requires a "key" connection. This connection is a "look-up" command that instructs Loftware Label Manager to locate the appropriate record for the required data.

In Loftware Label Manager, you identify your data key by selecting the Database-Key option from the Data Source dialog box. To better understand Database-Key and its look-up function, think of the data in a telephone directory.

In a telephone directory, "Name" is the "key connection." That is, people always locate a telephone number by "looking up" the name first. An individual's name provides the key to other pieces of data, such as a street address and telephone number.

Loftware Label Manager's ODBC works the same way. When you identify the look-up key (e.g., Part Number"), you are providing the user with the key that allows Loftware Label Manager to retrieve critical data for your labels. The Database-Key is unique because even though the data source is Database, it also requires keyboard input from the user. It is both a keyboard entry field and the look up key for the database.

Every label that is attached to a database must have one field that is designated as the Database-Key. Note again, that the Database-Key field is a dual-purpose field:

- It accepts keyboard input from the user, batch file, or LPS pass file.
- It retrieves data from a database like a Database-Data field.

Note: *A Database-Key may* ***not*** *be linked to a Unicode field in a database.*

The top part of the Database-Key setup dialog defines the connection to the database. Database-Key / Data Source fields have the following options:

Key: Data Source Name - Select the name of the database to which you want to connect. Note that this is the data source name (DSN) you assigned to the database in the ODBC Control Panel. For some ODBC drivers, this name is the name of a single database. For other ODBC drivers, such as the .DBF driver, this name is the name of a group of databases.

Key: Table Name - Select the name of the specific table in the database to which you want to connect. For relational databases, like Microsoft Access, this is the name of a table in the selected database. For "flat file" databases, like .DBF files, this is the name of the specific database. For Microsoft Excel 5.0 workbooks, this field contains the name of the specific worksheet in the workbook.

Key: Field Name - Select the name of the field in the database that you want to associate with this field on the label.

The bottom part of the Database-Key setup dialog defines how this field is set up on the On-Demand Print Form. The options are:

Get Value From - The Get Value From field defines from where the key field entry comes. For simple database connections, this is always Keyboard (the default).

Entry is Optional - Check this option if you wish to allow the user to bypass the look-up function and omit database data from selected labels.

Key: Help Text - The Help Text field allows you to enter a custom prompt that is displayed in the Status Bar (at the bottom of an On-Demand Print Form) to assist the user in data entry.

Database-Data

Note: *Variable images can be useful if you wish to have a different picture of each of your products on their corresponding label. Variable images may be specified as coming from a database or the keyboard.*

The Database-Data Data Source directs Loftware Label Manager to retrieve data for the field from a specified field in the database. This is the most common type of look-up.

Returning to the telephone directory example, assuming that we have defined some other field as Database-Key (Name field in the telephone database), we could then attach the Database-Data to the Phone Number field in the telephone book database. At print time, whenever the user types a Name in the associated Database-Key field and presses **Enter**, the telephone number is automatically entered into the field associated with the Database-Data.

The top part of the Database-Data setup dialog defines the connection to the database. This connection is the same as described above for Database-Key.

Important Note: *If you want to link to a Unicode Field, you must set up the field via the Language Properties Wizard and set the data format to UTF-16.*

Options for Database-Data Data Source fields

Data: Data Source Name - Select the name of the database you want to connect to through ODBC. (See Database Key: notes on Data Source Name)

Data: Table Name - Select the name of the specific table in the database to which you want to connect.

Data: Field Name - Select the name of the field in the database from which you want to retrieve data.

Note: *If you have previously made a database connection, Loftware Label Manager "remembers" the last database and table selected. If you are setting up a number of fields from the same database, the database and table are automatically pre-set for you. You need only specify which field in the database contains the information for the field on your label.*

The bottom part of the Database-Data dialog box defines how this field is set up on the On-Demand Print Form. The options are:

Display on Form - Defines if the retrieved data is displayed on the On-Demand Print Form and if the user is able to override the retrieved data.

When you select ...	Loftware Label Manager...
Don't Display	Retrieves and prints the data, but it is not displayed on the *On-Demand Print Form*
Display, Do Not Allow Changes	Retrieves and displays the data in the *On-Demand Print Form* so the user can verify that the correct data has been retrieved. The user, however, cannot change the data.
Display And Allow Changes	Retrieves and displays the data in the *On-Demand Print Form* so the user can verify that the correct data has been retrieved, as well as allowing the user to make changes to the retrieved data.

Data: Help Text - The Help Text field allows you to enter a customized prompt that is displayed in the Status Bar (at the bottom of an On-Demand Print Form) to assist the user in data entry.

Database-File Data Source

The Database-File Data Source is used to connect a field on a label with a field in the database, similar to the Database-Data data source. The difference is that the Database-File assumes that the matching database field contains the name of a file that contains the data for the field.

Example: A manufacturer of cleaning solvents might have several different "In case of contact" warnings. Rather than repeating this information for every product in the database, the user could create a set of "Warning Label" text files and tell Loftware Label Manager to use the database to "look up" and retrieve an appropriate file in response to a number or code entered by the user.

The Database-File setup dialog defines the connection to the database. This connection is the same as described previously for Database-Data.

Database - Select the name of the database to which you want to connect. (See Database Key for notes on Data Source Name.)

Table - Select the name of the specific table in the database to which you want to connect.

Field - Select the name of the field in the database that contains the name of the file from which you want to retrieve data. Note: Loftware Label Manager checks the Data subdirectory for the file if you do not specify a full pathname. You may change the default directory using the **Options | File Locations | Text Data Files** menu.

Note: *Fixed data does not show up on the On-Demand Print Form but does show up on the printed label.*

Database-Serial Number

The Database-Serial data source is used to connect a field on a label with a field in the database, similar to Database-Data. The difference is Database-Serial assumes that the matching database field contains the name of a Serial Number file to use for this field.

Note: *You may not specify a full path name or extension for your serial file names in the database. The subsystem checks the Serial subdirectory for the file. If you wish to use a different directory, you may change it using* ***Options | File Locations****. Make sure that all of your serial number files exist in this directory before trying to use your system!*

Using this advanced technique, you could set up one AIAG label for all your automotive customers, but have FORD part numbers use a FORD serial number sequence, GM part numbers use a GM serial number sequence, etc. Loftware Label Manager can "look up" which serial number to use from the database!

You must create all serial files specified in your database before you can do any printing. Refer to the section below for a technique for creating multiple serial files.

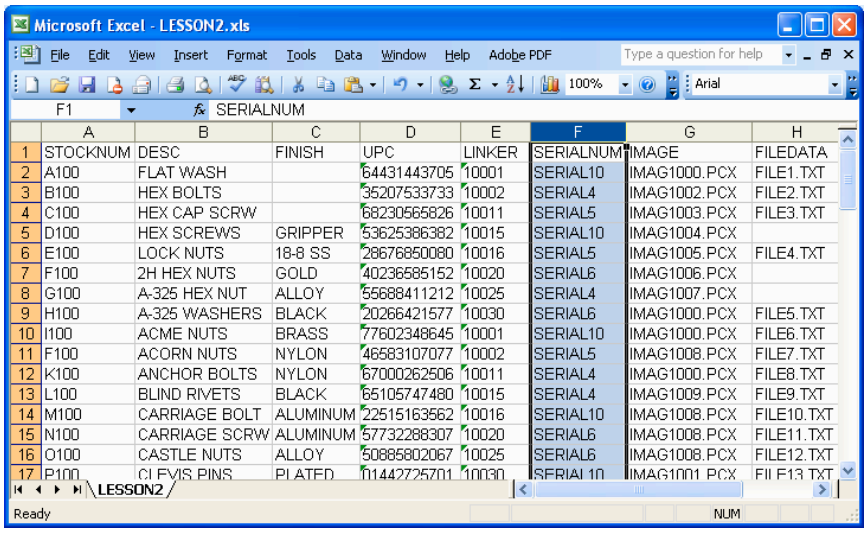
The Database-Serial setup dialog defines the connection to the database. This connection is the same as described above for Database-Data.

Database - Select the name of the database to which you want to connect. (See Database-Key notes on Data Source Name).

Table - Select the name of the specific table in the database to which you want to connect.

Field - Select the name of the field name in the database that contains the name of the serial number file that you want to retrieve data from for this field on the label. Note: Full pathnames should be supplied if other than the default. Not all serial files specified in the database contain extensions.

The following example shows a sample section of a database that calls out serial file names in the Serial_Num column.



	A	B	C	D	E	F	G	H
1	STOCKNUM	DESC	FINISH	UPC	LINKER	SERIALNUM	IMAGE	FILEDATA
2	A100	FLAT WASH		64431443705	10001	SERIAL10	IMAG1000.PCX	FILE1.TXT
3	B100	HEX BOLTS		35207533733	10002	SERIAL4	IMAG1002.PCX	FILE2.TXT
4	C100	HEX CAP SCRW		68230565826	10011	SERIAL5	IMAG1003.PCX	FILE3.TXT
5	D100	HEX SCREWS	GRIPPER	53625386382	10015	SERIAL10	IMAG1004.PCX	
6	E100	LOCK NUTS	18-8 SS	28676850080	10016	SERIAL5	IMAG1005.PCX	FILE4.TXT
7	F100	2H HEX NUTS	GOLD	40236585152	10020	SERIAL6	IMAG1006.PCX	
8	G100	A-325 HEX NUT	ALLOY	55688411212	10025	SERIAL4	IMAG1007.PCX	
9	H100	A-325 WASHERS	BLACK	20266421577	10030	SERIAL6	IMAG1000.PCX	FILE5.TXT
10	I100	ACME NUTS	BRASS	77602348645	10001	SERIAL10	IMAG1000.PCX	FILE6.TXT
11	F100	ACORN NUTS	NYLON	46583107077	10002	SERIAL5	IMAG1008.PCX	FILE7.TXT
12	K100	ANCHOR BOLTS	NYLON	67000262506	10011	SERIAL4	IMAG1000.PCX	FILE8.TXT
13	L100	BLIND RIVETS	BLACK	65105747480	10015	SERIAL4	IMAG1009.PCX	FILE9.TXT
14	M100	CARRIAGE BOLT	ALUMINUM	22515163562	10016	SERIAL10	IMAG1008.PCX	FILE10.TXT
15	N100	CARRIAGE SCRW	ALUMINUM	57732288307	10020	SERIAL6	IMAG1008.PCX	FILE11.TXT
16	O100	CASTLE NUTS	ALLOY	50885802067	10025	SERIAL6	IMAG1008.PCX	FILE12.TXT
17	P100	CLEVIS PINS	PLATED	01442725701	10030	SERIAL10	IMAG1001.PCX	FILE13.TXT

Figure 8-D: Database calling out serial file names

Creating Multiple Serial Files

1. Create a variable text field on your label that is later deleted.
2. Double-click this field to get the Data Source screen.
3. Click Serial Number.
4. Click **New** to create as many serial files as you need.
5. Delete the variable text field.

Quantity and Duplicate Values from a Database

Quantity and Duplicate can be specified at print. Optionally, you can override the quantity (or duplicate) setting through new values retrieved from your database.

Setting Quantity and Duplicate Values

1. Create a field in your database and enter quantity values appropriate for that record.
2. Create a non-printing field on your label and assign it (via the Properties Box) an exact Field Name of **QUANTITY (or **DUPLICATES)
3. Follow the procedures for changing the data source for this label field to Database-Data and attach it to your database field containing the quantity information.

Once configured, Loftware Label Manager uses the new value derived from your database for every print run of labels, regardless of the value shown in the Quantity field on the printing screen.

Chapter 9 On-Demand Printing

On Demand Printing - Overview

Note: *There are three ways to print labels "On-Demand" with Loftware Products. This chapter describes the traditional way of prompting the operator for label data and making label requests. The* ***Thin Client On-Demand Print Utility*** *works as a client to the Loftware Print Server (Chapter 1 in the LPS User's Guide) and has most of the functionality of On-Demand Print. Refer to the Thin Client Modules chapter in the LPS User's Guide.) The Thin Client does not require that Loftware be installed on the Client PC and can be far easier to maintain if you have several print stations. The WebClient is similar to the traditional On-Demand Print, but runs across the Internet to print labels on-demand. Refer to the LPS User's Guide for more details before making your choice.*

If you decide to print from within Loftware Label Manager, Loftware's On-Demand printing module offers immense flexibility, and is easy to use. In On-Demand printing, you enter data into the On-Demand Print Form generated from the label that you designed. On-Demand printing allows labels to be printed on an *as needed* basis. Produce a single label or several identical copies of the same label. All data sources, serial numbers, formulas, check digits, and calculations are evaluated "on-the-fly" based on the data requested at print time.

Thus far, this User's Guide has focused on the design and editing of Loftware Label Manager labels. However, it is important to remember that every time you create a label, Loftware Label Manager automatically creates a default **On-Demand Print Form** for use in the On-Demand Print Module and the Thin Client Module. (Information on Thin Clients is found in the LPS User's Guide.)

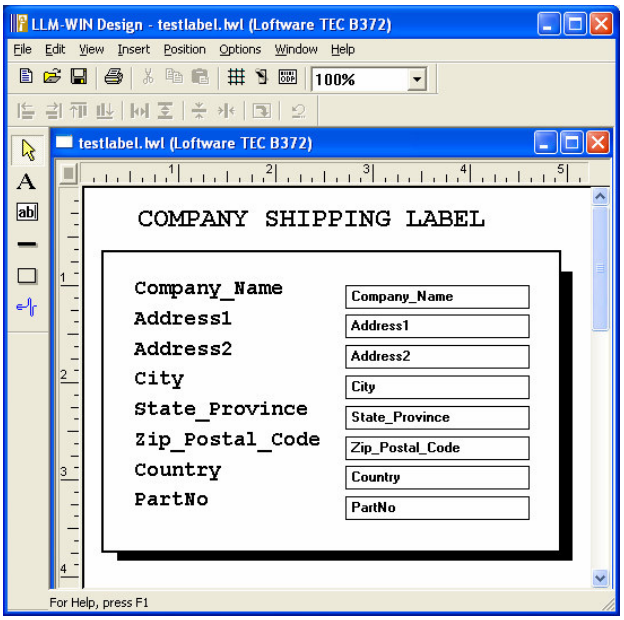


Figure 9-A: Default On-Demand Print Form

On-Demand Printing

Starting On-Demand Printing

1. Choose one of the following methods to start On-Demand printing:

   a. Click the On-Demand printing icon in Loftware Label Manager's Design View.

   b. Click **Start > Programs > Loftware Labeling>| On-Demand Print32**.

   The On-Demand application is displayed with the file open dialog box. The labels displayed here reflect the labels directory specified in **Options | File Locations**. The default is the **Loftware Labeling\Labels** subdirectory.

2. Select the label you wish to print from the list of files in the dialog box and press **OK**. The On-Demand Print Form for the selected label is displayed.

Note: *If your label is attached to a database and you are using Loftware's "Auto Format Mode," the correct label is automatically loaded after entering the Key field data and pressing* ***<Enter>****. Refer to the Data Sources chapter and Knowledge Base Article #42534 on Loftware's Website.*

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3. Enter data in the fields displayed on the On-Demand Print Form, or select fields from a database. Press **Enter** or **Tab** to move to the next field, Press **Shift+Enter** or **Shift+Tab** to move to the previous field.

4. Click on the active printer icon to print labels, or use the **File | Print** menu command, **F9.**

5. The **Print | Labels** dialog box lets you specify the number of labels you want to print, as well as a default quantity of labels. (This dialog box is not displayed when you use the printer icon to request a print.)

6. Press **OK** to print labels.

7. Repeat steps 3 and 4 to print additional labels or use the **File | Open** menu command to load and print a new label.

The On-Demand Print application with a sample On-Demand Print Form is displayed.

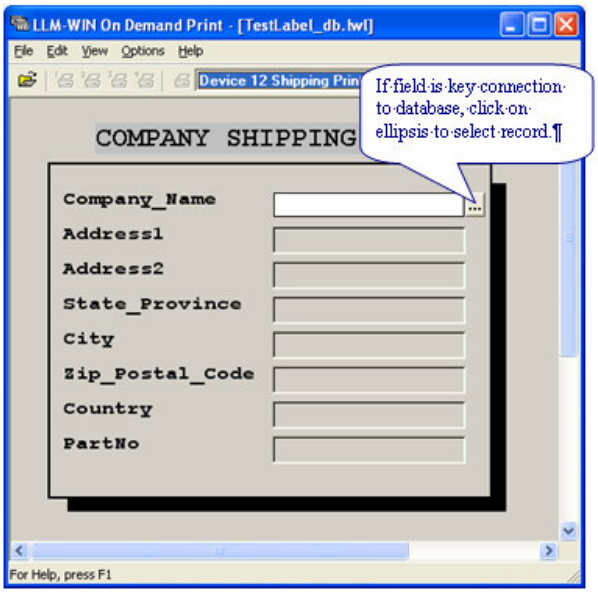


Figure 9-B: The On-Demand Print application with a sample On-Demand Print Form

Entering Data

When you first load a label, the top left data entry field is selected (has a flashing cursor). Type data into the selected field and edit the data using the cursor keys, backspace key or standard Windows' copy, cut and paste operations. If your label is connected to a database, the cursor defaults to the field defined as Database-Key. A Browse Button (ellipsis) is also displayed when a label is connected to a database. (See the next section for more information on browsing in a database).

Entering RFID Data

If you are using On-Demand Print to print an RFID label, the procedure is much like an ordinary On-Demand Print job, except that the data that you supply must be in a hex format. Only the numerals 0-9 and letters A-F are accepted in the ODP application. RFID data will normally be derived from other fields or will be in a database. It is rare that you would actually type it in.

Setting Quantities and Duplicates

Occasionally, a label may feature more fields than can be displayed at one time on the On-Demand Print Form. If this occurs, a scroll bar is displayed on the right hand edge of the On-Demand Print Form. As you **TAB** through the On-Demand Print Form, the screen automatically scrolls to display the next data entry field. When you **TAB** through the last (bottom) field, the screen scrolls back to the first (top) field, setting Quantity and Duplicate Copies.

- When performing data entry prior to printing, Loftware Label Manager allows you to select the desired quantity of labels and duplicate copies.
- The Quantity value specifies the number of labels you want to print. The Duplicates value specifies how many duplicates you want of each label. The following examples clarify the difference.

Assume a label has an incrementing numeric Serial Number attached to it (a counter).
The starting number for the following examples is 1.

Example 1

Set Quantity to 8 and Duplicates to 1

- Eight total labels are printed.
- The labels are sequentially numbered 1, 2, 3, 4, 5, 6, 7 and 8

Example 2

Set Quantity to 5 and Duplicates to 2

- Ten total labels are printed.
- There are five sets of two labels numbered 1, 1, 2, 2, 3, 3, 4, 4 and 5, 5. There are 5 (Quantity) of labels with a duplicate of each.

Example 3

Set Quantity to 1 and Duplicates to 5

- Five total labels are printed.
- There are five identical (duplicate) labels produced, numbered 1, 1, 1, 1 and 1.

The total number of labels printed is always **Quantity x Duplicates**.

If your label does not have a Serial Number or an incrementing or decrementing counter field, changing either Quantity or Duplicates has the same effect.

Quantities and Duplicates Methods

In the On-Demand Print Application:

- Click in the Quantity or Duplicates box, type in the new value, and press **Enter.**

- Alternatively, enter the Quantity and Duplicates in the **Print Label Reset** dialog box if you use the **File | Print** menu command to print. Default Quantity and Duplicates are also entered into this dialog box.

Note: *You may specify Quantity and/or Duplicate amounts directly from a database.*

Printing with On-Demand Print

Using Printing Shortcuts

Typically, in a Production Printing environment, an operator is printing many requests. To speed up the printing process, On-Demand printing has four printer icons on the toolbar, one for each assigned printer.

- After an operator has entered all of the data for a label, he or she can click on the printer they use to print.
- Without a mouse, press ALT+1 to print to Printer 1, ALT+2 to print to Printer 2, ALT+3 to print to Printer 3 or ALT+4 to print to Printer 4. (Press and hold the **ALT** key and then press the number of the Printer you wish to select.)

Associating .LWL files with On-Demand Print

You may want to have On-Demand Print rather than Design open .lwl files.

To set up an .LWL file to open in On-Demand print:

In Windows 2000/XP

1. From the Windows Explorer, select **Tools > Folder Options**.
2. Select the **File Types** tab.
3. Scroll through the list and select LWL **Label Document**.
4. Click on **Change**.
5. Select **On-Demand Print** from the list.
6. Click **OK** on all the dialog boxes.

Note: *You may use this same technique to associate .lwl files with other Loftware applications such as Range Print, etc.*

Printing Labels Connected to a Database

There are a few special considerations for printing using database connections:

- When you attach your label to a database, one input field must be designated as a "key field." This is the field that the operator enters data into or chooses from the Database Browse window that tells On-Demand Print which record to retrieve from the database.

- In On-Demand printing, when you type a value into a key field and press **Enter** or **Tab**, On-Demand printing retrieves the associated record and displays the data from that record.
- If you type in a database key and multiple matching records exist for the key, Loftware Label Manager displays a list of possible matching fields. Select the appropriate record from the list.

Note: *It is possible to override a "key" field value by enabling* ***Allow Empty Records During Database Retrieval*** *in the* ***Options | Preferences | Options*** *tab or setting AllowEmptyRecordSet=1 in the* ***LLMWDN32.INI*** *file.*

Note: *Refer to the Data Sources chapter for information on using Loftware's Auto Format Mode.*

Filtering and Browsing a Database

The following sections describe how to gather data from a database for a label using a variety of timesaving methods.

Filtering a Database

If you have a large database, you can save time by using LLM's filtering option. If you type in one or more characters, you can select only a part of the database and specific records.

1. Open the desired label; place the cursor in the key field.
2. Type one or more characters into the text box, click on the **ellipsis** **icon**, or press **Control | B**.

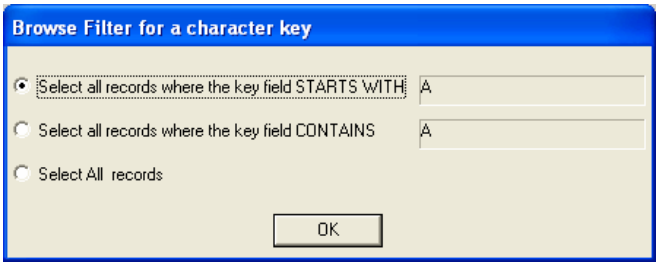


Figure 9-C: Browse Filter Dialog Box

3. Select one of the three options listed, click **OK**.
4. Scroll to select the record, or browse further using the Search Key (see the section below on Retrieving a Record).

Browsing a Database

To find the "key" field at print time, you can perform a browse of available database records by:

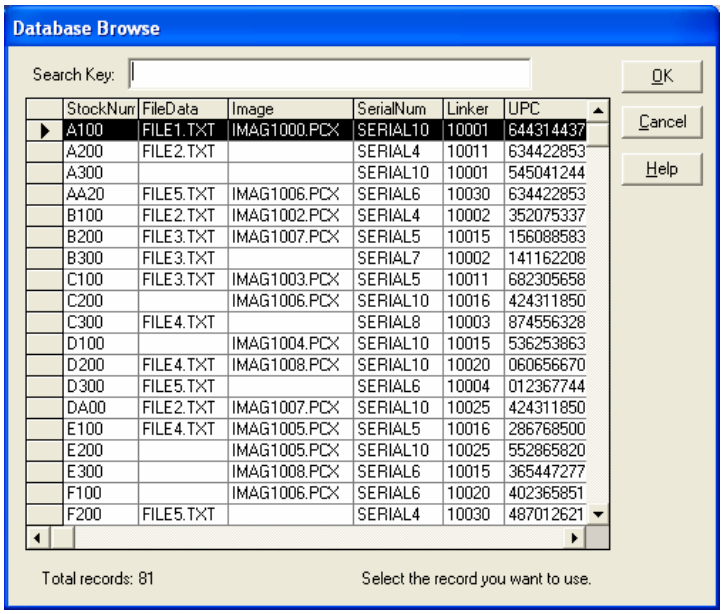
- Moving the cursor to the key field.
- Using the **Edit | Browse** menu command or pressing **Ctrl+B.**
- Clicking on the **Browse** (Ellipsis) **Button** to view a list of available records.

Loftware Label Manager displays a Database Browse window that contains a full list of the records in the database. See the next page for instructions on disabling browsing in Loftware.

Retrieving a Record

1. Select the desired record and click **OK,** or
2. Type in the first character (or characters) of the record in the **Search Key** text box.

See the following examples:



StockNum	FileData	Image	SerialNum	Linker	UPC
A100	FILE1.TXT	IMAG1000.PCX	SERIAL10	10001	644314437
A200	FILE2.TXT		SERIAL4	10011	634422853
A300			SERIAL10	10001	545041244
AA20	FILE5.TXT	IMAG1006.PCX	SERIAL6	10030	634422853
B100	FILE2.TXT	IMAG1002.PCX	SERIAL4	10002	352075337
B200	FILE3.TXT	IMAG1007.PCX	SERIAL5	10015	156088583
B300	FILE3.TXT		SERIAL7	10002	141162208
C100	FILE3.TXT	IMAG1003.PCX	SERIAL5	10011	682305658
C200		IMAG1006.PCX	SERIAL10	10016	424311850
C300	FILE4.TXT		SERIAL8	10003	874556328
D100		IMAG1004.PCX	SERIAL10	10015	536253863
D200	FILE4.TXT	IMAG1008.PCX	SERIAL10	10020	060656670
D300	FILE5.TXT		SERIAL6	10004	012367744
DA00	FILE2.TXT	IMAG1007.PCX	SERIAL10	10025	424311850
E100	FILE4.TXT	IMAG1005.PCX	SERIAL5	10016	286768500
E200		IMAG1005.PCX	SERIAL10	10025	552865820
E300		IMAG1008.PCX	SERIAL6	10015	365447277
F100		IMAG1006.PCX	SERIAL6	10020	402365851
F200	FILE5.TXT		SERIAL4	10030	487012621

Figure 9-D: The Database Browse Window

The list "speed searches" to the area of the database you are seeking.
For example, if you type in "T" in the Search Key box, the database scrolls to the first instance of the parameter "T"; in this case, "T100".

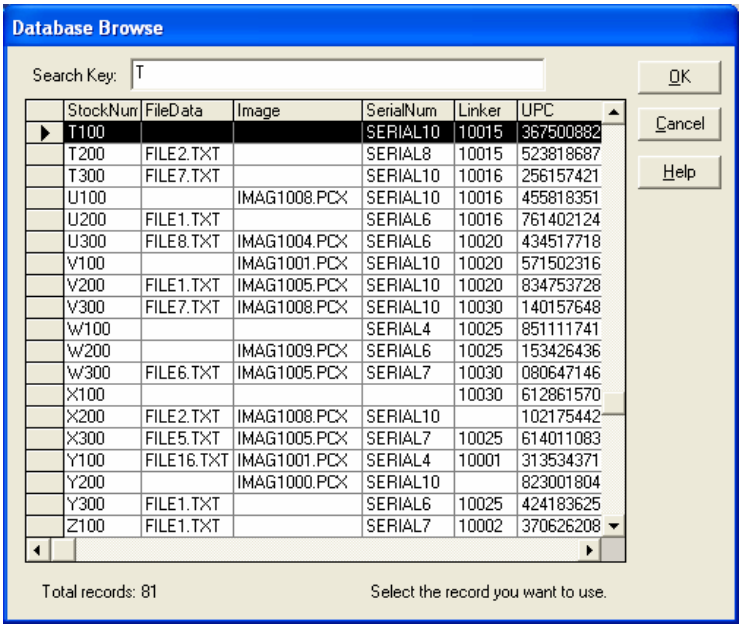


Figure 9-E: The Database Browse Window with a parameter in the Search Key Box.

Disabling the Database Browse Option

The ellipses buttons that enable browsing a database are displayed by default in On-Demand Print. These buttons as well as the **Edit / Browse** option in the Menu Bar may be hidden or disabled in On-Demand Print. To do this, open C:\WINNT\LLMWDN32.INI (depending on your OS and location of Loftware's ini file).

Scroll to the **[Options]** Section, and add the following:

```
HideBrowse=1
```

Save the INI file, and re-open Loftware. All Database Browse ellipses as well as the Menu option are disabled or hidden.

The On-Demand Print Form

The default On-Demand Print Form is a column of data entry fields, one for each variable field that requires operator input. By default, each data entry field has the name of the field for a prompt.

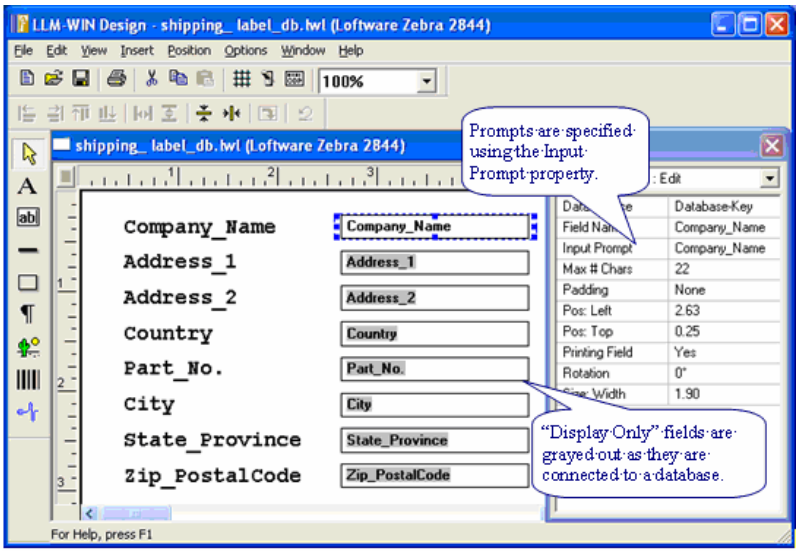


Figure 9-F: Sample On-Demand Print Form

If you have given the fields meaningful names, the default On-Demand Print Form allows you to begin printing labels immediately. There are three choices when using On-Demand Print:

1. You can accept default entries for On-Demand Print Forms, or
2. Keep the entries assigned when you designed the label, or
3. Customize the screens to meet your unique printing requirements, including foreign characters, special instructions for Data Entry, etc.

(See the International Printing chapter for some examples of ODP customization in foreign languages.)

Many users of Loftware Label Manager find that the default On-Demand Print Forms are satisfactory for their applications and may never use the On-Demand Print Form editing functions.

This section provides the following information on On-Demand Print Forms:

- Customizing an On-Demand Print Form
- Organizing an On-Demand Print Form in a meaningful way
- Creating nonprinting fields on an On-Demand Print Form

Customizing the On-Demand Print Form

1. Open or select the label you wish to edit, use the **View | On-Demand Print Form** menu command or the **Switch Views** button on the Loftware Label Manager Toolbar to switch to the On-Demand Print Form view.
2. Loftware Label Manager displays a Properties Box for the On-Demand Print Form, just as it does in design.
3. Edit properties for any field while the On-Demand Print Form is displayed using the same methods described in Chapter 3, "Creating a Label."

Important: *Fields which are seen on the On-Demand Print Form but which cannot be changed (display only) have their field name displayed on a grayed out background.*

Organizing the On-Demand Print Form

Loftware Label Manager provides you with virtually unlimited flexibility to arrange On-Demand Print Forms in ways that are meaningful to your operators and enhance your label. Essentially, you use the same editing techniques available in label design, including:

- Menus and Toolbars (the positioning commands are particularly useful for aligning and spacing fields).
- Click and drag methods.
- The Properties box.
- Change field prompts, and change the font sizes for the field prompts.
- Arrange the fields so that the data is entered in a natural or pre-defined order.
- Use lines and boxes to organize groups of related data items.
- Customize the prompts by defining them in meaningful and descriptive terms.
- Add fixed text instructions to the On-Demand Print Form, or add prompts in the natural language of the operator.
- Resize the edit controls for visual effect.
- Setting the order in which fields are entered

In the Loftware Label Manager, data is always entered from top left to bottom right. If you need to set the order that data is entered, you must move fields so that they are "sorted" from top left to bottom right. See the following figure for an example.

Note*: The order of the Operator Input Screen also reflects the data order for batch files, which are described in the Batch and Range Printing chapter.*

Resizing a Field's Data Entry Area

By default, the Loftware Label Manager creates all data entry fields with the same width to create a "columnar" input screen. If you rearrange fields on the On-Demand Print Form, you may wish to resize these data entry fields to more closely match the size of the data that fits in them.
Example: A sample "mailing label" along with an On-Demand Print Form follows:

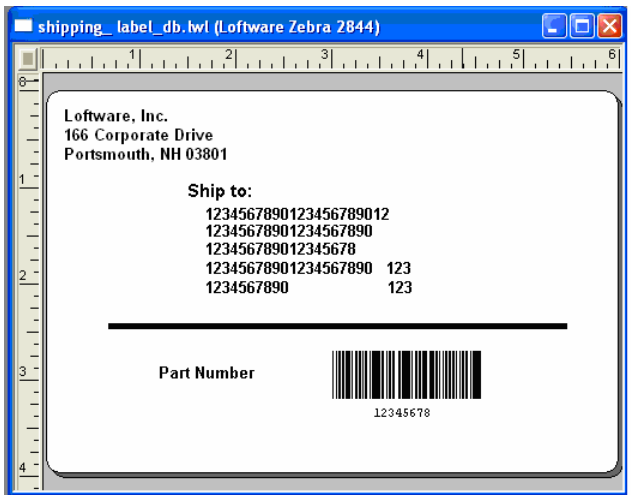


Figure 9-G: Sample mailing label format

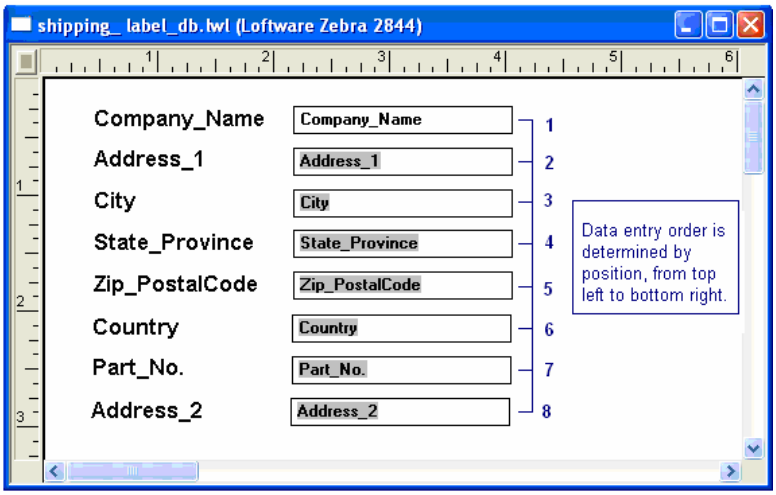


Figure 9-H: Default mailing label On-Demand Print Form

As you can see in the preceding figure, "Address_2" is not in the natural place in the entry order. Fields are added to the On-Demand Print Form in the order that they are created on the label. To illustrate our point about customizing On-Demand Print Forms, we added this field last as an "after thought".

The rearranged layout, with French input prompts added, looks like the following:

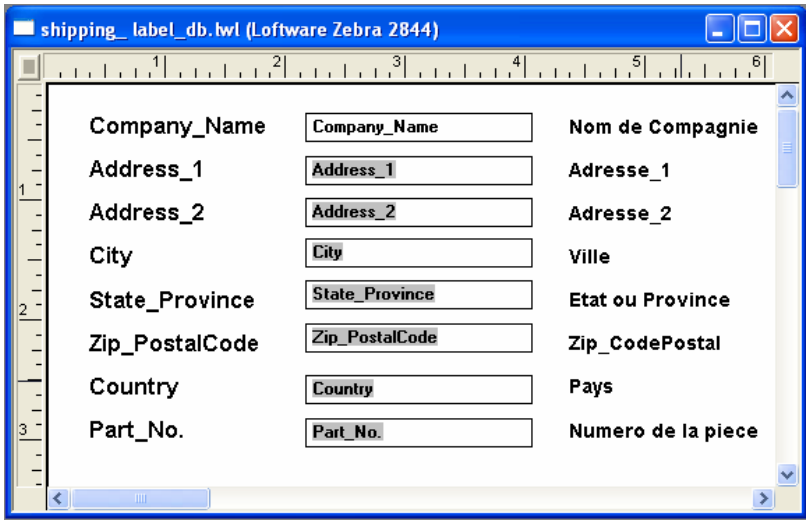


Figure 9-I: Revised mailing label On-Demand Print Form

Using Non-Printing Fields on the On-Demand Print Form

Occasionally, your applications require you to include fields on an On-Demand Print Form, which are not displayed on the label itself. This may happen when you are working with formulas that require an operator to enter a certain value. When this is combined with another value, the result is displayed on the label.

Take a simple mailing label for example. The way it is usually designed, the city name, state and zip code are separate fields. Consequently, the spacing on the printed labels is inconsistent. For example:

RyeNH03870

West ChesterfieldNH03466

Instead of the more natural:

Rye, NH 03870

West Chesterfield, NH 03466

As an alternative, we are going to consolidate the City, State and Zip fields on the label into one long field named City_State_Zip.

Consolidate City, State and Zip, Part 1

1. Open Label1.lwl (the label created in the label creation chapter of this guide) in Loftware Design Mode. (It is a label with City, State, and Zip are 3 separate variable text fields.)

2. Select the City field. Change its name to **City_State_Zip** and change its length to 32 characters.

3. Select the Zip_Code field and press the delete key (or use the **Edit | Cut** menu command) to delete it.

4. Select the State field and press the delete key (or use the **Edit | Cut** menu command) to delete it.

These changes to the label design produce the following:

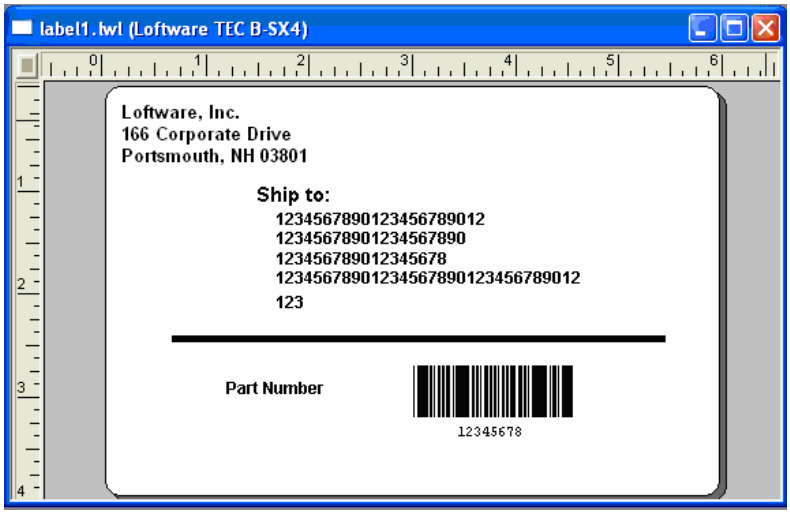


Figure 9-J: Revised label with consolidated City, State and Zip fields

Of course, making this change removed the State and Zip Code entry fields from our On-Demand Print Form. This is where non-printing fields come into play.

Consolidate City, State and Zip, Part 2

1. Switch to the On-Demand Print Form using the **View | On-Demand Print Form** menu command or by clicking on the **Switch Views** Icon.

2. Select the Variable Text Tool. This creates a non-printing field since we are creating the field on the On-Demand Print Form instead of on the label.

3. The field is shown when you click on the form. Do not worry about the location right now. Name the field **City**, change its max chars to 32 and change its input prompt to City, State, Zip.

4. Create another non-printing field by placing another variable field on the Print Form. Do not worry about the location right now. Name the field **State**, change its max chars to 2 and delete its input prompt.

5. Create a third non-printing field. The location is not important right now. Name the field **Zip_Postal_Code**, change its max chars to 5 and delete its input prompt.

The “in process” results of these steps is shown below:

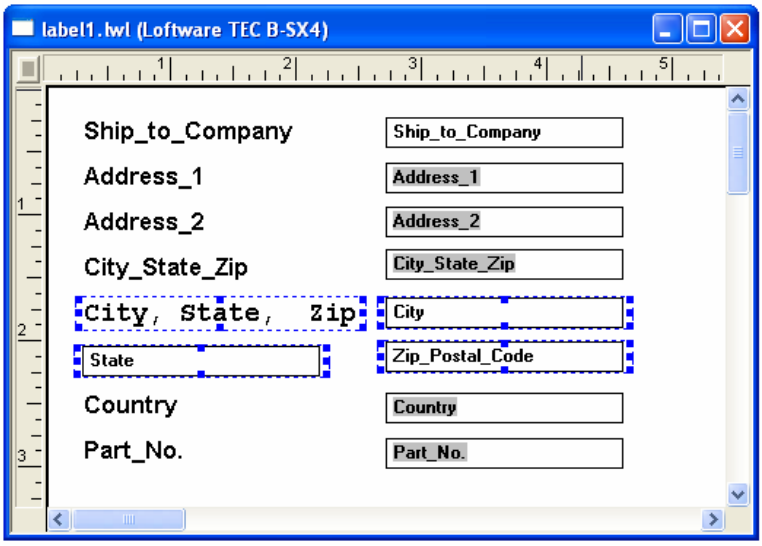


Figure 9-K: Label with non-printing fields selected

Now all we need to do is set up our formula so the City_State_Zip field on the printed label gets its data from our new City, State and Zip/Postal Code non-printing fields.

Consolidate City, State and Zip, Part 3

1. Double-click the City_State_Zip field on the On-Demand Print Form.

2. Change this field data source to **Formula**, enter the formula:
   `“City &” “State &” “Zip_Postal_Code”` and press Enter.

   Notice that the City_State_Zip data entry field disappears from the On-Demand Print Form. Because it is derived from a formula, this field no longer needs a user’s input. To edit this field, you must toggle back to Label Design mode.

3. Move and resize the data entry fields associated with our new non-printing fields so that our On-Demand Print Form looks the way it should.

This simple example demonstrates the basic technique for using non-printing fields. As the Loftware Label Manager’s powerful features such as the formula data source are used, the use of non-printing fields increases.

Note: *Non-printing fields may be defined using the properties box instead of using the “switch view” approach on the label design screen. This technique is more confusing since you actually see the field on the label design screen. Future designers may not understand what you have done and accidentally delete the field.*

On-Demand Print Options

The following section covers:

- Print Preview
- Sample Batch Files
- Command Line Parameters

Using Print Preview

When in the On-Demand Printing Application, you can see a preview of how the label looks prior to printing it. Use the following method:

1. Open the label you wish to preview in On-Demand Print.
2. Enter data for the label using keyboard entry or the database browse/filter method.
3. Choose **File | Print Preview**.

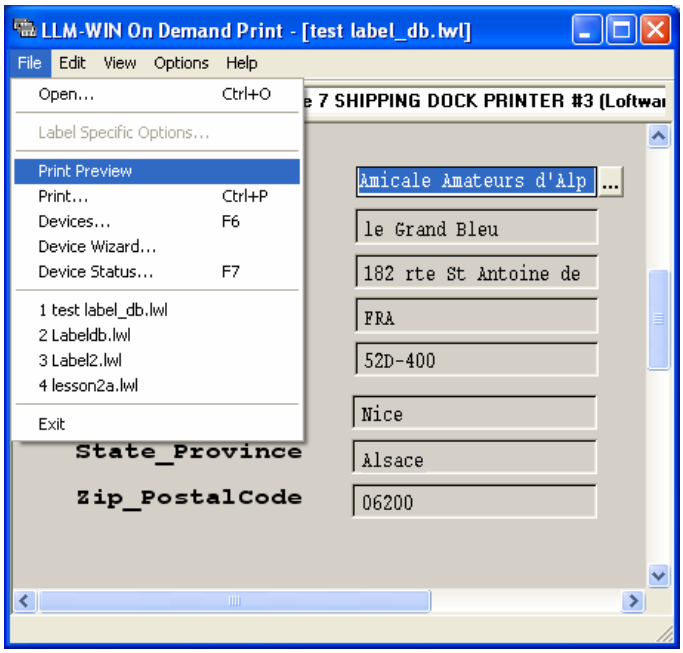


Figure 9-L: LLM On-Demand Print Window showing Print Preview option.

The Print Preview dialog box is displayed.

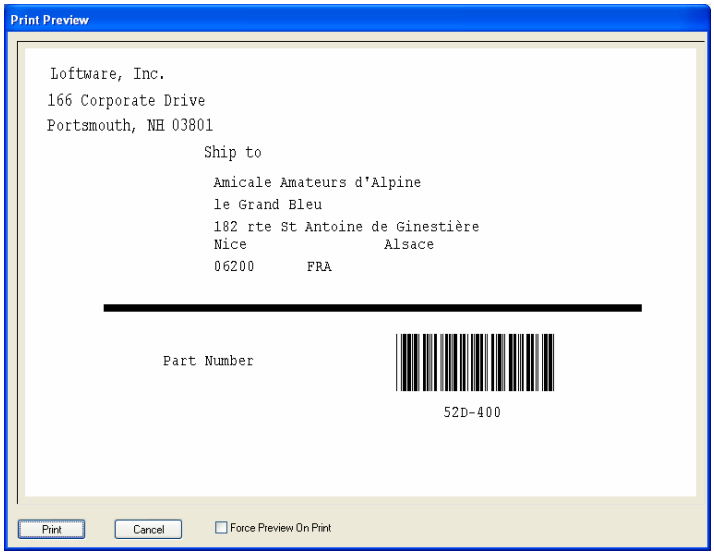


Figure 9-M: The Print Preview Dialog Box

Choose from the following options:

- Click on **Print** if you want the label to print as you see it.
- Click on **Cancel** if you would like to change the label before printing.
- Check "**Force Preview on Print**" if you would like a print preview to be displayed each time before the label is printed.

Force Preview On Print – This checkbox is not checked by default. When checked, a preview of the label is displayed each time you click on the print icon, or you choose **File | Print**. The "Force Preview" checkbox is only visible when you choose **File | Print Preview**.

Note: *Formulas and Print Preview – Fields that contain formulas are printed on the label exactly as they have been designed, but in Print Preview, the formula area is displayed with filler data. The preview does not affect the accurate printing of any label with formulas.*
Padding property and Print Preview – Padding options such as "Center with Spaces" are NOT displayed in Print Preview. Further information on Padding is found in the Creating a Label chapter.

Creating a Sample Batch File

1. Open the **On Demand Print** application.
2. From the **Options** menu, select the **Create Batch Sample** command.
   - This command opens the Windows Notepad application and creates a text file using the current label name with a .bcs file extension (batch sample).

- This text file contains information helpful for designing and printing batch files as well as providing two examples of batch files based on the current label format.

Refer to the **-T** command line parameter below if you would like to view a label field order report file.

On-Demand Print Command Line Parameters

Several command line parameters are available for the On-Demand Print module. However, you do not normally automate On-Demand print since the program requires running interactively. The following command line parameters are available to On-Demand Print:

LLMWOD32 {label} {arguments}

{label}	Optional. The specified label is opened automatically. The dialog box that prompts you to select a label is not displayed. E*xample:* mylabel.lwl
-A	The application is displayed maximized.
-I	The application is displayed minimized.
-N#	Set the default quantity to the specified number. *Example:* **-N5**
-D#	Set the default duplicates to the specified number. *Example:* **-D2**
-G#	When running non-interactively, specifies the number times each page is printed. Only applicable if a layout is associated with the label or using a printer installed through control panel.
-T	Creates a report file containing the tab Order for the fields on the label. This is useful for determining the order that the data needs to be in for a comma delimited batch file. If this is used, you must specify a label. The label name with a .tab extension is created in the directory where the label is located. The tab order of the label is changed by customizing the operator-input screen in label design mode. You may only generate a .tab file with a command line call, the syntax of which is: "**LLMWOD32 -T -Llabelname**."
E	Do not provide the Warning Message Box if in demo mode. This should only be used when demo-ing the product

The following is a text file with the tab order for a label with three fields (a variable text field, a variable barcode field, and a variable image field). The descriptive text provides field name field length, tab order, and field type:

Field Name	Length	Tab Order	Field Type
Barc0001	6	1	507
Text0002	8	2	503
Imag0003	12	3	506

Note: *Refer to On-line help for more information about generating reports with the "tab" order of label fields.*

Audit Files in On-Demand Printing

All the Loftware Label Manager print modules (On-Demand Print, Batch Print, Database Range Print and the Clients) have the ability to capture label information that is requested and printed. Information on Audit Files is found at the end of the Advanced Techniques chapter in this User's Guide.

Chapter 10 Page Layouts

Page Layouts - Overview

This chapter presents a general overview of page layouts. You use page layouts to “lay out” multiple labels (“multi-up” labels) when you wish to print.

- Two or more labels on a single sheet of label stock on a Windows printer (such as a LaserJet, DeskJet, bubblejet, dot matrix printer or any other Windows printer listed in the Control Panel)

or

- Multi-across labels on a roll of thermal or thermal transfer label stock.

Layouts are particularly useful if each label contains a serialized field or a field that contains unique database information. In these cases, you are able to use the full power of the Loftware Label Manager to obtain information from several, dissimilar sources of data, including:

√ Local and remote databases

√ Date/time fields

√ Formulas

√ Data files

√ Incrementing/decrementing fields, including serial number files

For example, assume you need to create a small, narrow label used to serialize electrical circuit boards and you need to print a “4-up”layout on a 3" by 4" inch section of thermal transfer label stock. Example shown in the following figure:

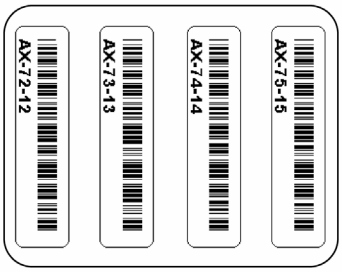


Figure 10-A: A serialized label printed “4-up”on a thermal transfer printer

In this example, each label contains a single bar code field consisting of a serial number that has a prefix and two incrementing numbers side by side. Other typical layouts include matrix-style layouts such as the popular 8.5" x 11" sheets of 14-Up or 30-Up labels.

The Loftware Label Manager print modules (On-Demand Printing, Database Range Print and Batch Printing) can print labels in either row order (default) or column order.

The figures below display two examples of common page layouts.

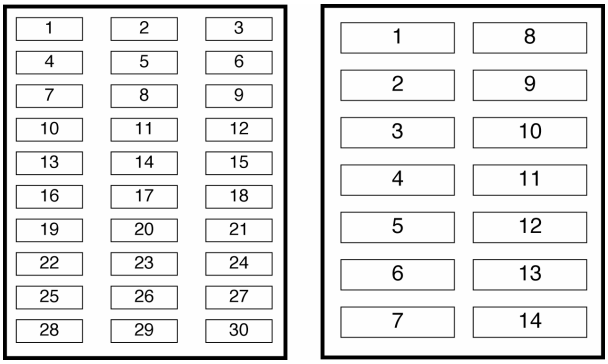


Figure 10-B: 30-Up label stock printing in row order, 14-Up label stock printing in column order

Labels similar to those shown here are typically found in office environments, but are increasingly used in applications requiring specific bar code information.

Page Layouts in Loftware Label Manager

What is a Page Layout?

A page layout refers to a single sheet of labels or the number of labels produced before the label stock is ejected or advanced.

A page **layout** describes both the dimensions of your label stock and the number of labels printed on one “page.”

Labels that are ejected are typical of Windows printers such as the LaserJet, and labels that are advanced to the next page or group of labels are typical of thermal transfer or Windows printers such as continuous laser or dot matrix.

In the Loftware Label Manager design module, you attach or reference this layout description to your label format by using the **File | Media Setup** menu.

The Page Layout description defines:

- Label and page dimensions
- Gap and margin sizes
- Information on how many labels can fit “across” or “down” the page of your label stock

Loftware Label Manager provides a comprehensive set of tools for convenient management of your page layouts. For example, you can easily add new layouts, change existing ones or delete layouts that are no longer relevant.

Where Page Layouts are Stored

Loftware Label Manager creates a page layout list based on file names in the LAYOUT subdirectory. (To determine what subdirectory is used for your page layouts, check **Options | File Locations** from any Loftware Label Manager module).

The page layout description is stored in layout files that feature the ".LWY" extension. For example, a layout file for a bar coded shelf label might be named "BCSHELF.LWY". If the correct layout subdirectory (in **Options | File Locations**) is not chosen, or it cannot be found by the printing module, an error message is displayed. The message states "Unable to load layout associated with label. No layout used".

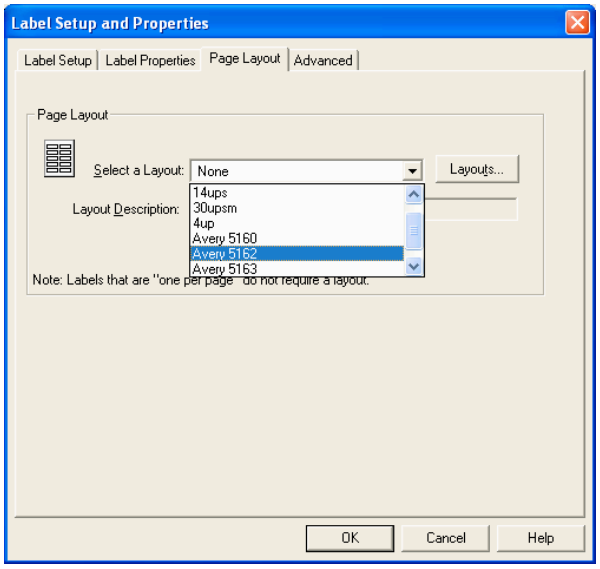


Figure 10-C: Label Setup dialog box with label format attached to Avery 5163 (10 up) labels

Working with Page Layouts

Note: *Do not make a '1 up' layout for your label. It is not necessary and causes the printer to go into extended mode at print time. See Chapters 3, 9, and Appendix B for information on extended mode.*

Using Page Layouts

To access the Manage Layout dialog box:

- From the Loftware Label Manager design module, click the "Page Layout" tab under **File | Media Setup**. Alternatively, press **F5**, or select **Options | Layouts...** from the Loftware Label Manager menu bar.

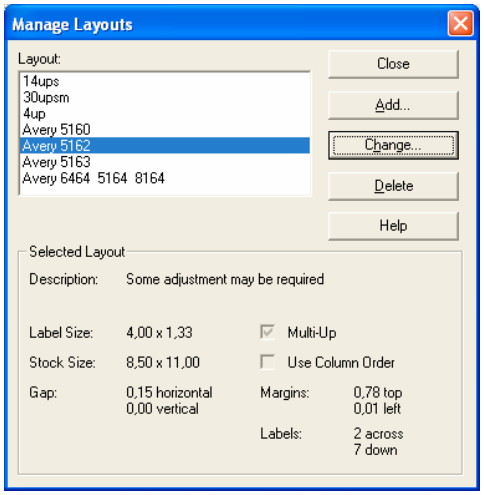


Figure 10-D: Manage Layouts Dialog Box

You can reference the starting label of a print job by using Loftware Label Manager printing applications (On-Demand, Database Range and Batch). Any subsequent page layout editing, however, must be accomplished in the Loftware Label Manager design module.

Note: *The default page layout is "NONE". Therefore, if you do not reference a page layout with your label, Loftware Label Manager prints just one label (per page) at print time. For most printing applications, this is the standard.*

Attaching an Existing Page Layout to your Label Format

1. Open that label format in Loftware Label Manager Design.
2. Go to the **File | Media Setup** dialog box.
3. Select a layout appropriate for your label under the **Layout** drop down list.

If there are no layouts that apply for this label format, select the **Layouts**... button and proceed to either add a new layout or change an existing one.

More on Page Layouts

Adding a Layout

- Click "**Add**" to add a new layout option; give your new layout a name (8 or less alphanumeric characters) and a meaningful description.

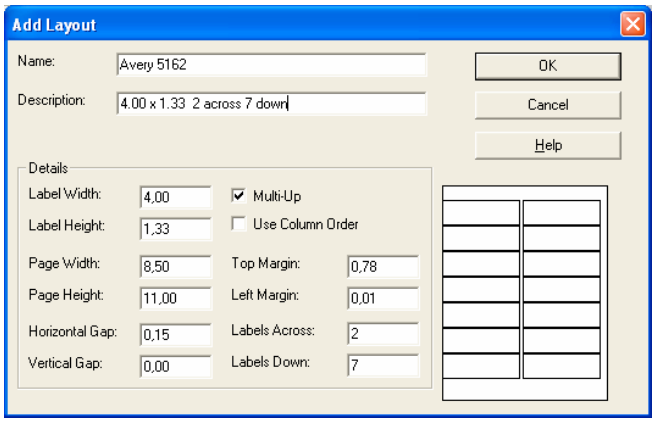


Figure 10-E: Add Layout dialog box

Changing an Existing Page Layout

Highlight the layout and click on the **Change** button under the Manage Layout menu.

The Change Page Layout menu is displayed and presents the same layout attributes (label width, page height, etc.) as the Add Page Layout menu.

The Add or Change Layout dialog box contains all of the attribute details for your layouts. These include:

Layout Identification	
Layout Name:	Name of the layout file using standard file names. Note: Loftware Label Manager automatically adds the “LWY” file extension
Layout Description:	Provides a brief description of the layout used in the Manage Layout and Label Setup dialog box
Layout Detail	
Label Width:	Width of label in default units (inches, centimeters, pixels, millimeters - these can be set in the Options | Units menu).
Label Height:	Height of label in this layout.
Page Width:	Width (from edge to edge) of your label stock.
Page Height:	Height (from edge to edge) of your label stock.
Horizontal Gap:	Horizontal spacing between labels.
Vertical Gap:	Vertical spacing between labels.
Multi-Up:	On/Off toggle for printing multiple labels on a single page or on a sheet of label stock.
Use Column Order:	Orders labels through a row of columns that start from top left and proceed to bottom right. The default value is Row Order.
Top Margin:	Margin from the top of label stock to the top of the first row of labels.

Left Margin:	Margin from left of label stock to the left edge of first column of labels.
Labels Across:	Number of labels across one page of label stock.
Labels Down:	Number of labels down one page of label stock.

Deleting a Page Layout

From time to time, you may want to edit your layout list by deleting old layouts that are no longer required by your label printing applications.

1. Back up your current layout subdirectory by using a tape backup system or by copying the contents of the Layout subdirectory to another directory.
2. Select the layout name that you want to delete from the Layout list.
3. Choose the **Delete** menu option or press **Ctrl-D.**
4. Respond to the “Are you sure want to delete layout: 4Up?” question.

Printing Using Page Layout

When you open a label with an attached layout, note that the Loftware Label Manager printing modules (On-Demand Print, Database Range Print and Batch Print) feature an additional “layout” toolbar on the screen:

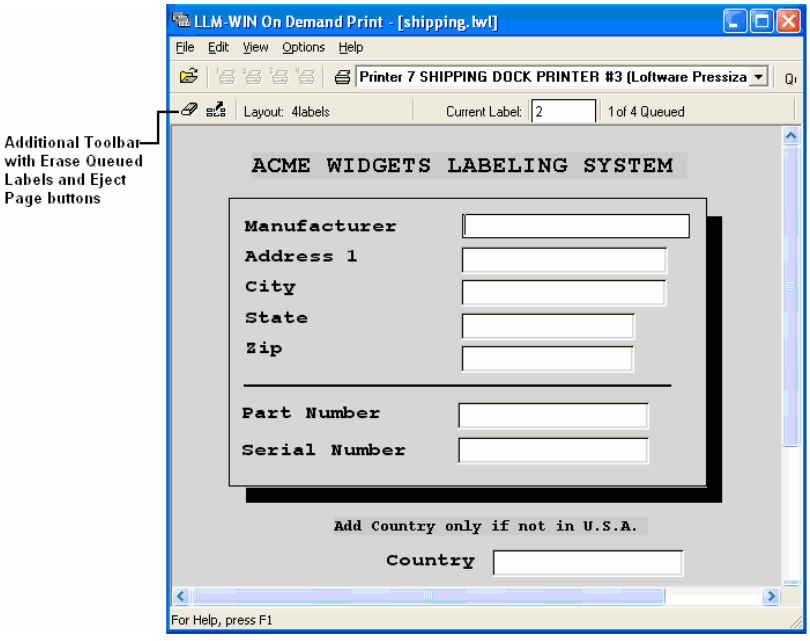


Figure 10-F: Additional toolbar for labels attached to layouts

The layout toolbar provides valuable information about printing labels that use layouts. For example, at the far right of the toolbar, there is a queue counter, which tells you how many labels are currently in the print queue. This number is helpful when printing small labels up to large multi-up sheets of label stock. As you enter label data and select **Print** (by pressing **F9** or clicking on the printer icon), the queue counter reflects the change. As soon as a complete page of labels is in the queue, the page is automatically ejected from the printer.

You also see two icons (with tool tips) on the toolbar:

- Use the one on the left to erase labels that are in the print queue but have not yet been printed.
- Use the one on the right to eject a partially printed page of labels.

These icons are identical to actions within the **Options | Layouts...** menu.

Current Label

As mentioned in the previous section, the layout toolbar includes the print counter that references the current label on your layout. You can change the value by clicking the mouse pointer into the editing box or by pressing **F4.**

Here are two ways to use this option:

1. You may find that a print job uses several sheets of label stock and finishes on the last sheet, but several labels on that sheet are unused. To re-use the label stock and print to the remaining labels, change the "current label" to reflect the label number you want to start printing. This number takes into consideration whether you are printing labels in row or column order. If you are queuing labels to print in an on demand mode, the current label counter increments to reflect the current position on your page of labels.
2. Suppose you are printing to a sheet of label stock with 30 labels per sheet. You queue 15 and then realize that labels 12 through 15 contain incorrect information. By resetting the current label counter to 12, you effectively clear labels from 12 on. This allows the operator to re-key the label data for these labels.

Note: *Many LaserJet manufactures do not recommend re-using sheets with partial labels. They tend to cause 'gumming' of the internal mechanisms of the printer.*

Clear Previously Queued Labels

Clicking this icon clears any labels that may be in the print queue that have not been printed. (This assumes that you have queued a partial page of labels that have not been printed.)

End of Job Action

If there is a partial page of labels queued when a new label format has been loaded or you exit one of the Loftware Label Manager printing modules (On-Demand, Database Range Print or Batch Print), you are given the option of printing (and ejecting) the partial page of labels.

Note: *A "No" answer results in clearing the queue of all labels that have not been printed.*

Layouts and Pages

For increased printer throughput and speed, use the **Page** value in addition to quantity and / or duplicates. Note: this option is available only when your label is attached to a layout.

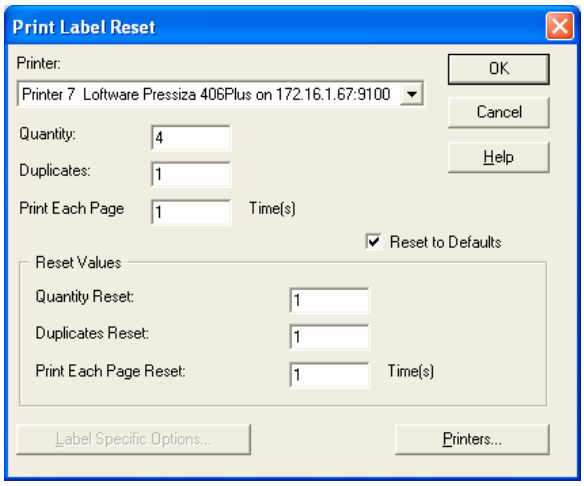


Figure 10-G: Print Label Reset Dialog Box

The concept of "pages" is especially relevant to on-demand, thermal printers. When a page value is used, Loftware Label Manager print modules image the entire multi-up label, send it to the printer once and specify to the printer x-amount of pages.

Mixing Label Formats on a Page (Multi-Label Layouts)

Windows printers (like LaserJets) allow you to switch between different label formats while you fill a page layout. Follow these rules:

- Just load a new label and keep printing. The software keeps track of which "box" you are printing to and whether the "page" needs to be ejected.
- The label must be the same size as the label size specified in the layout.
- Do **not** mix label formats on a layout if you are using a thermal transfer printer.

Chapter 11 Batch and Range Printing

Batch Printing

In Loftware Label Manager, the Batch Printing application extracts information for labels from an ASCII text file. The text (or batch) file features lines of data and each line of data includes the record of information to display on a single label.

Note: *Refer to Chapter 1 of the LPS User's Guide for additional information regarding integrating the Loftware Print Server with your own applications.*

Essentially, Batch Printing is an extension of On-Demand Printing. It automates the process, allowing you to print a list of labels in one operation.

Using Batch Printing, you can:

√ Create batches from your own application PC or host computer application

√ Run these batches using the Batch Printing application

√ Create an icon on the Windows desktop to run frequently used batches

√ Launch Batch Printing from your own application, using command line parameters to control the printing process

Batch files are ASCII text files that you generate from your own application to drive the printing process.

Note: *Refer to the On-Demand Printing chapter in this User's Guide on how to generate a sample Batch File layout for a specific label format. Refer to Chapter 1 of the LPS User's Guide about using the passmode option instead of comma-delimited files with the LPS interface to the Loftware Print Server.*

A "Lights the Way" Tip

Importance Considerations when using batch files

- Data Sources for your fields should almost always be keyboard. This ensures that the Data in your batch file is transferred to your label.
- Consider using one of the ActiveX Controls or the Loftware Print Server for easy batch file integration.

The key to understanding batch files is to understand that the purpose of a batch file is to:

- Select which label format to print
- Provide the data for the label as the operator would if he/she were printing the label in On-Demand printing
- Optionally, specify the quantity of labels and the number of duplicates of each label (defaults to Quantity: 1, Duplicates: 1)

An Example of Batch Printing

It is easier to understand Batch Printing with the following example: Assume that you need to print name tags for a company seminar. You create a label called **NameTag.lwl** that has two variable fields: Name and Department. **NameTag.lwl** looks like this:

Figure 11-A: Name Tag

More importantly, for the purposes of Batch Printing, the On-Demand Print Form looks like the following:

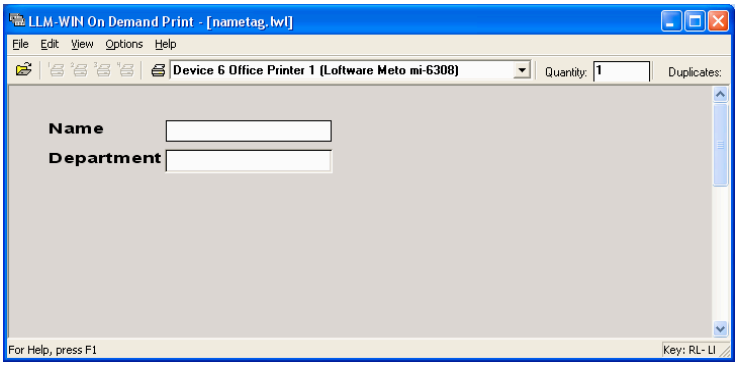


Figure 11-B: Demand Print Form Window

Note the order of the input fields. The Name field is first; the Department field is second.

To print this label using On-Demand print:

1. Load the label format, **NameTag.lwl**.
2. Enter the Name data.
3. Enter the Department data.

4. Set the Quantity and Duplicates values.
5. Print the label.
6. Repeat steps 2 through 5 until done.

Of course, we want to automate this process, so we create a batch file. Call the batch file **NameTag.bch. T**his batch file looks like this:

```
!NAMETAG.LWL, Henry Miller, Maintenance,1,1
!NAMETAG.LWL,John Andrews,R&D,1,1
!NAMETAG.LWL,Andrew Mason,Operations,1,1
!NAMETAG.LWL,Sherri Londeron,Scheduling,1,1
!NAMETAG.LWL,Harold Hood,Human Resources,1,1
!NAMETAG.LWL,Terri Jackson,Data Processing1,1
!NAMETAG.LWL,Sam Jakeman,Programming,1,1
```

It contains the same information we have in manual printing.

This…	Means…
!	This is the “load label” command
NameTag.lwl	The name of the label to load
,	Field Separator
Henry Miller	Data for first (Name) field
,	Field Separator
Maintenance	Data for second (Department) field
,	Field Separator (optional)
1	Quantity of labels to print (optional)
,	Field Separator (optional)
1	Number of Duplicates to print (optional)

Note: *Each line contains the information for one label.*
Note: *The default for quantity and duplicates is 1. If data for a field needs to be blank, put a comma placeholder in the file for it.*

The Batch Printing Application

Starting Batch Print

1. Choose Start>Programs>Loftware Labeling>Batch Print 32.
2. Select the batch file to print, in this case NAMETAG.BCH, press OK.
3. Use the File | Print menu command to print labels or click on the Printer icon for the printer you are using.

Printing the Batch of Labels

This is a very simple example that does not tap all of the power of batch printing, but it demonstrates the steps for batch printing:

1. Design your label completely including the field's data sources.
   Batch printing can work in conjunction with all of Loftware Label Manager's other data sources including database.
2. Note the order of the fields on the On-Demand Print Form. If you want to control the order of data in the batch file, arrange the On-Demand Print Form accordingly. Remember, data must be provided in order from top left to bottom right.
3. Test Print and save the label.
4. Create the batch from your application.
5. Use the Batch Printing application to print your batches.

Batch File Syntax

We stated earlier that batch files are ASCII text files. Actually, they are a special kind of text file called a comma separated value **(.CSV)** file. A comma separated value file has special rules to handle the case where a field's data contains either a double quote character (") or a comma (,).

For example, if the data for an address field includes "New York, NY" how would Batch Printing know that the state abbreviation NY was part of the field's data and not the data for the next field?

To handle this situation, **.CSV** files use these rules:

- If the data for a field contains an embedded comma, the entire data field must be enclosed in double quotes. In the above example, the data would be placed in the file as "New York, NY".
- If the data for a field features quotation marks within a string of characters; (e.g., James "Bucky" O'Brien), you must enclose the double-quotes in double quotes; (e.g., James ""Bucky"" O'Brien).
- If the data for the field is a quoted string (e.g., "The Big Apple"), then you must enclose the field in triple-quotes; (e.g., """"The Big Apple"""").
- If there is no data for a field, type two commas in succession. Do not leave any spaces for the blank field; (e.g. Paul,,Armstrong where ,, indicates there is no middle initial data).
- If the data for a field includes a single double quote, (e.g. I am 6'2" tall) you must precede it with a double quote; (e.g. "I am 6'2"" tall").

Note: *You may change the batch field separator to something other that ',' by placing the following command in the 'llmwdn32.ini' file in your Windows or WinNT directory. In the [Options] section, add the following line: SETBPDELIM = char. Where char is any single ASCII character like '~' (do not include the quotes). You may also specify a decimal value for any character. For instance, 09 would tell batch print to use the low ASCII control code 9 as the delimiter. Using a different delimiter than ',' allows you to avoid worrying about quote and comma rules.*

An example helps to demonstrate. Assume we have a library of tapes and CDs for which we want to generate labels. We create a label named MUSIC.LWL that has six data entry fields: Title,

Format, CatalogID, Category, Record_Label and Artist. A sample batch is shown below: (Portions of the batch that demonstrate the above rules are underlined for emphasis).

!Music.lwl,Jerome Kern,CD,AK 47861,Big Band,Columbia,Paul Weston,1,1

!Music.lwl,"Best Of The Beautiful, The",CD,MCAD-5571,Piano,MCA,Roger Williams,1,1

!Music.lwl,"Three Suns Shine Again, The",CD,DMC1-0998,Dancing,RCA,Three Suns, ,1,1

!Music.lwl,Moonlight Serenade,CD,70190,Big Band,MCPS,"Miller, Basie, Krupa etc.." ,1,1

!Music.lwl,"Homecoming, Volume 1",CD,GMCD 80037 1,Big Band,RCA,Various,1,1

!Music.lwl,"Homecoming, Volume 2",CD,GMCD 80037 2,Big Band,RCA,Various,1,1

!Music.lwl,"Inkspots, The",CD,MSD 35189,Vocals,MCA,Inkspots,1,1

!Music.lwl,"Frank Sinatra Collection, The",CD,5015-2,Vocals,DEJA VU,Frank Sinatra,1,1

!Music.lwl,Homecoming,Tape,CX 33432,Country,RCA,Earl ""The Pearl"" Williams,1,1

!Music.lwl,Peter Nero's Greatest Hits,CD,CK 33136,Piano,Columbia,Peter Nero,1,1

!Music.lwl,Banjo Party,CD,GMD 80040,Banjo,Good Music,Smokey Montgomery,1,1

!Music.lwl,"Sting, The",CD,MCAD-31034,Ragtime Piano,MCA,Marvin Hamlisch,1,1

!Music.lwl,One Voice,CD,CK 40788,Columbia,Barbra Streisand,1,1

.CSV files can be created by most database and spreadsheet programs. For many batch applications, you do not have to worry about this detail.

Creating a Sample Batch File

To create a sample batch file, open the **On Demand Print** application, choose a label, and from the **Options** menu, select the **Create Batch Sample** command. This command opens the Windows Notepad application with a text file using the current label name with a **.BCS** file extension (batch sample). This text file contains information for designing and printing batch files as well as two examples of batch files based on the current label format.

Most important is the ordering of the comma separated variable information. Examples 1 and 2 display the expected order by displaying the field names that were entered in the **Design** application. The order is determined by how the fields are organized in the **On-Demand Print Form** view of the Design application and are ordered from top to bottom and left to right.

Changing the Batch Order

1. Switch to the **On-Demand Print Form** view once all the fields are added in the **Design** application, **Design** view, and **On-Demand Print Form** view

2. Click the **Switch Views** icon on the desktop, or, from the **View** menu, choose the **On-Demand Print Form** command.

Note: *Any fields added when in Design view are printed on the label and displayed in On Demand Print. Any fields added when in On-Demand Print Form view are only displayed in On Demand Print and in design terms are "non-printing."*

Grouping the Fields

1. Hold the **Ctrl** key down and single click on both the field name and the input prompt (the field with the box around it).

Note: *When the field is selected, handles are visible around its outer edge. Fields may be added to or removed from the group by single clicking on the field while the CTRL key is held down.*

2. Release the **Ctrl** key, and with fields grouped, click on any field in the group and drag the group to the new position, or use the keypad arrows.

3. Click on any non-grouped item or on a blank portion of the screen to ungroup the fields once they have been moved to the correct location.

Note: *Some fields may display as Text0001 or Barc0002 and may be unclear as to what is expected for input. To rectify this, give appropriate names to each field in the Design application. Notice that any fields that are fixed in the Design application are not listed here since the information is static and does not have to be replaced.*

Editing and Creating the Batch File

1. Once the sample batch file has been created with the desired order, edit the file and delete all the information before and after the examples.

2. First example:

   Label name, Quantity, Duplicates, (and optionally Pages) specified:
   !LABEL1.LWL,Part_Number,Description,QUANTITY,DUPLICATES,PAGES
   !LABEL1.LWL,Part_Number-next set of data,Description-next set of data,QUANTITY,DUPLICATES,PAGES

3. Second example:

   Label name, Quantity, Duplicates and Pages are omitted:
   Part_Number,Description
   Part_Number-next set of data; Description-next set of data

4. Decide whether to include the label name in the batch file or to include the label name in the command line to call the **Batch Print** application.

Note: *If the batch file is using multiple label formats, the label name must be included in the batch file. For the purposes of this example, the label name is included in the batch file.*

5. Delete the entire Second example and the title line and second batch line of the First example.

   !LABEL1.LWL,Part_Number,Description,QUANTITY,DUPLICATES,PAGES

6. Replace Part_Number with a 12-digit number; replace Description with up to a 25-character description; and replace Quantity, Duplicates and Pages with the number 1.

   !LABEL1.LWL,444455556666,Thermal Transfer Printer,1,1,1

7. Save the file in Notepad as Label1.bch (Batch unlike bcs = Batch Sample), change File Type to all files and then open the file using the Batch application and print it.

Batch Commands

We have already seen the format of a batch line:

!LoadFormat,Data_Field1,Data_Field2, É Data_LastField,Quantity,Duplicates

While this is the recommended format because it specifies everything, (the format, data, copies and duplicates) there is some flexibility in the format.

The !LoadFormat command and the Quantity and Duplicates values are optional. If you omit the Quantity and Duplicates values, the system prints the default Quantity and Duplicates (Quantity: 1, Duplicates: 1). If you omit the Load Label command, you must specify the format in the command line when you call batch printing (see Automating the Batch Printing Process).

Using our previous NAMETAG example, compare the complete syntax batch file:

!NAMETAG.LWL,Henry Miller,Maintenance,1,1
!NAMETAG.LWL,John Andrews,R&D,1,1
!NAMETAG.LWL,Andrew Mason,Operations,1,1

With the minimal syntax batch file:

Henry Miller,Maintenance
John Andrews,R&D
Andrew Mason,Operations

This "minimal" batch format allows you to more easily "download" a data file to a **.CSV** file format and use that as a batch file. Remember, if you use the minimal format you must specify the label format to use in the command line. You cannot switch formats within the batch file when using the minimal syntax.

In addition to data, batch files can also contain one additional command.

*****Message,Message Text

Mixing Different Labels in a Batch

You can mix labels freely in a batch by issuing new !LoadLabel commands in the batch file. A good example of this is a shipping application where you want to print labels for all of the components in a related shipment. When you print the labels, you could print a "Start of order #" and "End of order #" label to separate each set of labels.

Range Printing

Range Printing is similar to Batch Printing in that you extract data for printing from another source. Instead of using a batch-file "script;" however, you must create a query that instructs Loftware Label Manager to print a selected group of records from a database. In addition, Range Printing is used only with labels that are attached to a database.

Note: *Refer to Chapter 1 of the LPS User's Guide for additional information regarding integrating the Loftware Print Server with your own applications.*

Within **Range Printing**, you can:

- Use the 'Query Assistant' to select a range without using SQL queries.
- Create an SQL query and print a selected range of labels.
- Save queries for frequently printed ranges.

- Create an icon on the Windows desktop to run frequently used queries.
- Launch Range Printing from your own application, using command line parameters to control the printing process.
- Launch Range Printing remotely from Loftware's LPS utility program.

Range Printing Example

Assume that you are working with an inventory label named **INVTAG.LWL** that has the following fields attached to a database:

- Item number, attached to database field **PARTNO**
- Item description, attached to database field **DESC**
- The warehouse row location of the part, attached to database field **ROW**
- An illustration of the part, attached to database field **IMAG**E

You want to print a series of inventory labels for selected locations (e.g. Rows A through H), sorted by part number.

Range Print a Series of Labels

1. Choose Start>Programs>Loftware Labeling>Range Print 32
2. The Range Printing application is displayed and the file open dialog box is presented.
3. Select the label you wish to print, (in this case INVTAG.LWL); press OK.
4. Define the Query in the Define Query dialog box following these steps:
    a. Click on the **Select From** button in the Range group box.
    b. Set the **Select From** field to ROW.
    c. Set the **Starting Value**: to A and the **End Value**: to H.
    d. Set the **Order by Field** to PARTNO. in the Ordering Group. Click OK.
5. Print labels using the **File | Print** menu command or **CLICK** on the Printer icon for the printer to which you want to print.

Labels That Can Be Range Printed

You can range print:

- Any label that is connected to a single database or relational database.
- Any label with one and only one database-key field (Get Value From = Keyboard).
- Any label connected to multiple databases if all databases share the same database key field. For multiple database connections, you can only select records using the key field.

For more information on attaching a database to a label and creating a Database-Key, see the Data Sources chapter in this guide.

Creating a Query

Loftware Label Manager uses standard SQL queries to retrieve information from a database. Fortunately, you do not have to know anything about SQL to use Range Printing. Using the Query Assistant, you just specify the records you want to select and which field you want to sort on (if any) and the Query Assistant creates the SQL statements for you.

Accessing the Query Assistant

- Whenever you load a new label, Range Printing presents the Define Query dialog box.
- Use the **Query | Define Query** menu command.

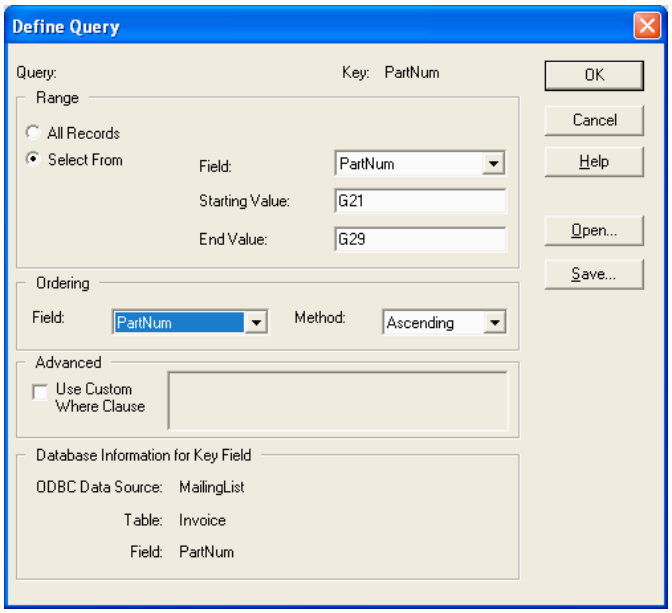


Figure 11-C: The Define Query dialog box

Range Section

Select the range of labels you wish to print. The default value is "All Records." If you accept the default, Loftware Label Manager prints all of the records in the database. You can, however, select a discrete range for printing by choosing the "Select From" option. When you select this option, Loftware Label Manager allows you to define a range from a selected field on the label.

Choosing the Start and End Value of "Select From Field"

1. Choose the field from which you want the records to print. (This can be different from the key assigned in label design.) Only those fields in the database that are attached to the label are displayed in this list.

2. Enter a start value in the Start Value box (e.g., type "A100" if you are beginning the print run with Part No. A100).

3. Enter an end value in the End Value box (e.g., type “C300” if you are ending the print run with Part No. C300).

Ordering Section

The Ordering function allows you to arrange the sequence of your print run (e.g., by part number in ascending or descending order). The default value (None) prints the records in the order that occur in the database.

- Select the appropriate Field that orders the print run from the list of available fields.
- Select Ascending or Descending, depending on how you wish your labels to print.

Advanced Section

Using a “Custom Where Clause”

If you have special needs, you can define your own SQL statements to determine which records are selected for printing.

- If you check the **Use Custom Where Clause** check box, the Select From range definition (in the Range group box) is not used.
- In this case, you can type a SQL statement into the Where Clause edit window. Obviously, you must be familiar with the SQL language in order to do this

Below are examples of possible syntaxes of a “Custom Where Clause” written in Range Print when defining a specific query. using the Custom Where Clause option.

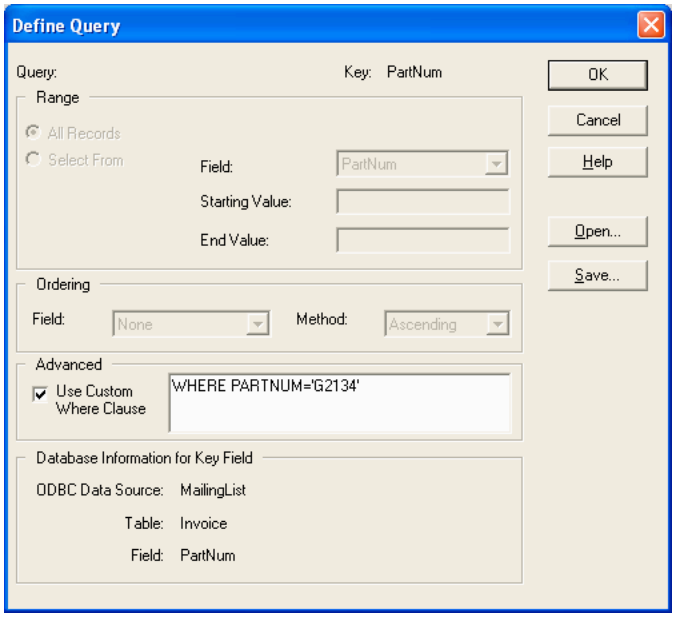


Figure 11-D: Using the “Custom Where Clause”

The table used for this example shown above is called Lesson2.database and it has a label with a database key field attached to the STOCKNUM column in the database. The table below displays the operators that could be used in the query and what they mean.

Operator	Comparison
=	Exactly Equal
LIKE	SQL LIKE
<> != #	Not equal
>	More than
>=	More than or equal to
<	Less than
<=	Less than or equal to

WHERE PARTNUM = 'A100'	Prints only the record A100
WHERE PARTNUM <> 'A100'	Prints all the records in the database except A100
WHEREPARTNUM >= 'A100'	Prints all records in the database including A100
WHERE PARTNUM='A100' OR PARTNUM='A300'	Prints record A100 and A300

Saving a Query

It is always a good idea to save your queries to avoid the need to reconstruct them again if you need to reprint the same labels in the Range Printing mode.

1. Click the **Save** button in the **Define Query** dialog box.
2. Enter a name for the query file, using **.lwq** as the filename extension.
3. Press **OK**.

Opening an Existing Query

To load an existing query:

- Click the **Open** button in the "define Query" dialog box; select the appropriate file name from the list of .lwq files.

Automating the Range Printing Process

The Range Printing application supports several command line parameters that let you automate the printing process. Using these command line parameters, you can launch range printing without any operator intervention.

When you run Range Printing from your application or from a Windows Program Icon the Command line parameters are specified after the program name.

Automated Range Print Examples

Example 1

LLMWRP32 invtag.lwl -Qinvtag.lwq

Runs the specified label and query and then exits the range printing application.

The range print application (LLMWRP32.EXE) recognizes the following command line parameters:

Command Line Parameter	Specifies the following…
label_filename	The name of the label to print.
-Qquery_filename	The name of the query to use.
-W “sql query”	A custom where clause, must be enclosed in quotes.
-Pn	Assign range to printer n, where n is the printer number (e.g., -P2 assigns the job to Printer No. 2).
-Nn	Sets the Quantity value to n (e.g., -N3 produces three copies of the label).
-Dn	Sets the Duplicates value to n (e.g., -D2 produces two duplicates of the label).
-M	Manual printing. Loads the label and the query and then waits for the operator to initiate printing.
-A	Maximize the application window using a command line.
-I	Minimize the application window using a command line.
-Rn	(non-interactive) Job Repeat count (e.g., -R3 means job runs 3 times).
-E	Do not display Demo Mode warning screen message.
-J	Tells Range Print not to re-download formats and graphics. This saves throughput time when making back-to-back calls to Batch/Range Print modules with the same label format.

Example 2

LLMWRP32 invtag.lwl -Qinvtag.lwq -P1 -N2 -D1

Would load the invtag.lwl label and invtag.lwq query, set the selected printer to Printer 1, set Quantity to 2 and Duplicates to 1, print the entire selected range and then exit back to the calling program.

Create an Icon to run Range Print

If you have a range print that must be run repeatedly, you can create an icon on the Windows desktop that the operator can use to run the range print by double clicking on the icon. For example, create an icon that the operator double clicks to print a range of inventory labels. The name of the label to print is **INVTAG.LWL** and the name of query is **INVTAG.LWQ**.

Range Print Audit Files

Range Printing has the ability to capture label information that is requested and printed. To enable Audit Files, see the Audit Files section of the Advanced Techniques chapter.

Appendix A ODBC

ODBC Overview and Information

***Note**: If you are using the LPS, you may not need ODBC. Please refer to the LPS manual for more information.*

ODBC (Open Database Connectivity) is Microsoft's strategic interface for accessing data in an environment of relational and non-relational database management systems (DBMS's). ODBC allows applications to access multiple data sources without having to understand the underlying format of the data being read. It is through this mechanism that the Loftware system is able to access your data.

The standard Loftware setup program installs Microsoft Data Access Components (MDAC) which includes the following ODBC drivers: Microsoft Access, dBASE, Microsoft Excel, Microsoft FoxPro, Paradox, Text (CSV and Fixed Length), SQL Server, and Oracle. 16-bit drivers are not included. If your data is in a different format, such as DB2, Sybase, Btrieve etc., you must obtain a 32-bit ODBC driver that is compliant with your database. You can often find these drivers by contacting your provider or by searching on the Internet.

***Note on Loftware Upgrades and ODBC**: During installation of a Loftware upgrade, the schema.ini file located in the \loftware labeling\dbases\ folder is overwritten. The schema.ini file is used by ODBC for connectivity to text files. Several text files can share one schema.ini file, but there can only be one such ini file per folder. Because Loftware supplies sample text files for ODBC, the upgrade installation must update, and therefore overwrite, the schema.ini file located in the \loftware labeling\dbases\ folder. It is therefore recommended that if you are using text files with ODBC, use a folder other than the \loftware labeling\dbases\ folder.*

ODBC manages databases through the use of registered "data sources." A data source consists of a specific set of data (e.g. a database), the information required to access that data, and the location of the data source.

Examples of Data Sources

1. A directory containing a set of dBase files you want to access.
2. An SQL Server database, the server on which it resides and the network used to access that server.
3. A Microsoft Access database
4. An Oracle database through a gateway to a Vax or AS/400

Connecting to a data source means establishing communications with a DBMS in order to access that data source's data. When you connect to a data source from an application through an ODBC driver, the driver makes the connection for you, either locally or across a network.

How Loftware Label Manager Uses ODBC

All databases are accessed using ODBC in Loftware Label Manager. The advantage of this is that Loftware Label Manager connects to any data source for which there is an ODBC driver.

Note: *If you are using the Loftware Print Server (LPS), data from your database is usually 'pushed' to the LPS. Refer to the 'Data Push' section in Chapter 1 of the LPS User's Guide.*

Before you can use a database as a data source in Loftware Label Manager, you must set up an ODBC data source for the data. The Loftware setup program creates 4 sample data sources for you, each of which points to sample databases in the 'Program Files\Loftware Labeling\dbases' directory. These datasources can be viewed and changed from the ODBC control panel applet as described below.

- Loftware dBase Sample – Sample Data Source for dBase IV and V files
- Loftware Access Sample – Sample Access database
- Loftware Excel Sample – Sample Excel database
- Loftware Text Sample – Sample ASCII text databases

ODBC Data Source Administrator

Access the ODBC control panel applet by clicking **Start > Programs > Loftware Labeling > Data Sources (ODBC)**. All Datasource editing is done from there.

There are several different categories of datasources: User, System, and File. These categories are explained in the sections below. Choose the one that best suits your needs and then go to the "Adding a Data Source" section for information on how to set it up. The Tracing and ODBC drivers tabs are also explained below.

Note: *The figure below displays the Administrator dialog box after several User Data Sources have been added*

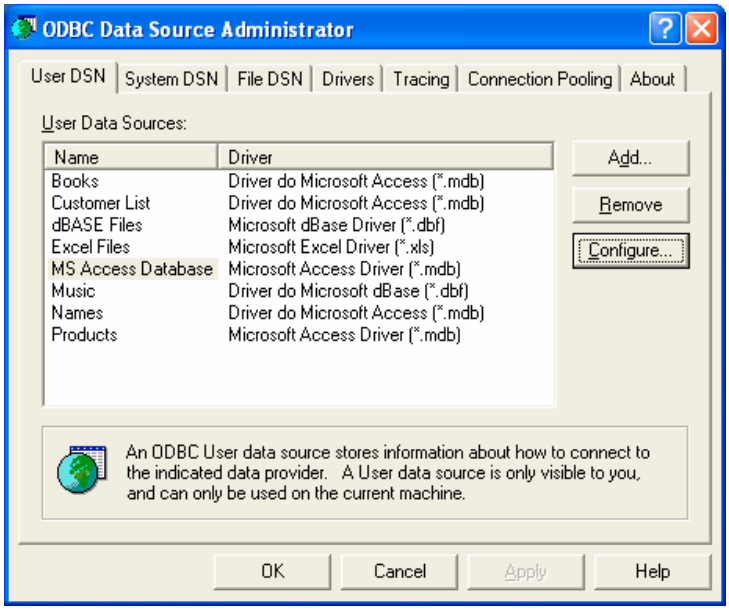


Figure A-A: ODBC Data Source Administrator Screen

User Data Source Tab (User DSN)

Adds, deletes, or sets up data sources with User DSNs. (DSN = Data Source Name). These data source configurations are local to a computer, and may only be used by the current user.

Note: *A networked database can be accessed with a User DSN.*

User Data Sources List

A list of all user DSNs that includes the name of each DSN and the driver associated with the DSN. Double-clicking a user DSN displays the driver-specific data source setup dialog box.

Configure

Displays the driver-specific data source setup dialog box that enables you to change the configuration of an existing user data source. You must select the name of a user data source from the list before choosing the Configure button.

Add

Adds a new user data source. If you choose this button, the Create New Data Source dialog box is displayed with a list of drivers. Choose the driver for which you are adding a user data source. After you choose Finish, a driver-specific setup dialog box is displayed.

Remove

Removes an existing user data source. You must select the name of the user data source you want to remove from the list before choosing the Remove button.

OK

Closes the Administrator dialog box. OK does not have to be pressed to accept changes to the User Data Sources list. Changes to the list have already been accepted once the OK button in the data source setup dialog box has been pressed.

Cancel

Closes the Administrator dialog box. Note that changes to the User Data Sources list are not rejected if the Cancel button is pushed.

Help

Displays the Microsoft ODBC Help screen.

System Data Source Tab (System DSN)

Adds, deletes, or sets up data sources with system DSNs. These data source configurations are local to a computer, but are not dedicated to a user. The system, or any user having privileges, can use a data source set up with a system DSN.

Note: *A networked database can be accessed with a System DSN.*

System Data Sources List

A list of all system DSNs that includes the name of each DSN and the driver associated with the DSN. Double-clicking a system DSN displays the driver-specific data source setup dialog box.

Configure

Displays the driver-specific data source setup dialog box that enables you to change the configuration of an existing system data source. You must select the name of a system data source from the list before choosing the Configure button.

Add

Adds a new system data source. If you choose this button, the Create New Data Source dialog box is displayed with a list of drivers. Choose the driver for which you are adding a system data source. After you choose Finish, a driver-specific setup dialog box is displayed.

Remove

Removes an existing system data source. You must select the name of the system data source you want to remove from the list before choosing the Remove button.

OK

Closes the Administrator dialog box. OK does not have to be pressed to accept changes to the System Data Sources list. Changes to the list have already been accepted once the OK button in the data source setup dialog box has been pressed.

Cancel

Closes the Administrator dialog box. Note that changes to the User Data Sources list are not rejected if the Cancel button is pushed.

Help

Displays the Microsoft ODBC Help screen.

File Data Source Tab (File DSN)

Note: *Loftware Label Manager does not support File DSNs. Use System and User DSNs.*

ODBC Drivers Tab

Displays information about the installed ODBC drivers. The ODBC Drivers list shows you which drivers are already installed on your computer.

ODBC Drivers List

Displays the name, version, company, file name, and file creation date of each ODBC driver installed on the computer.

OK

Closes the Administrator dialog box.

Cancel

Closes the Administrator dialog box. Note that this dialog box does not include the functions to Add or Delete. An ODBC driver must be added or deleted through the driver's setup program.

Tracing Tab

Enables you to specify how the ODBC Driver Manager traces calls to ODBC functions. The Driver Manager can trace calls all of the time, for one connection only; dynamically; or can allow tracing to be performed by a custom trace DLL.

Note: *Tracing is typically only used for troubleshooting ODBC connections. Most Loftware Label Manager users do not need to enable tracing.*

When to Trace

Enables tracing and determines when tracing is initiated. These controls can only be set while there is no connection. If "Don't trace" is selected, tracing is disabled. If "All the time" is selected, tracing is automatically performed at all times, for all connections on the machine. If "One-time only" is selected, tracing is performed only for the next connection, and is disabled after that connection is disconnected.

Start Tracing Now

Enables dynamic tracing that is performed as long as the ODBC Administrator dialog box is displayed. Dynamic tracing can be enabled whether a connection has been made or not. After it is clicked, the Start Tracing Now button is replaced by a Stop Tracing Now button. When the Stop Tracing Now button is clicked, or the ODBC Administrator dialog box is closed, dynamic tracing is disabled.

Log file path

Displays the path and file name for the file that stores the tracing information. The default path and file name (sql.log) are taken from the system information, but a new file is specified by either entering a new path and file name, or choosing the Browse button and selecting a directory and file.

Browse

Allows you to select the path and file name for the log file by browsing machine directories.

Custom Trace DLL

This control allows the user to select a trace DLL other than odbctrac.dll to perform tracing. The odbctrac.dll file that is shipped with the ODBC SDK can be replaced by a custom DLL of the user's choice. Enter the path and file name of the custom DLL, or **CLICK** the Custom Trace button to browse the directories for the custom DLL.

Custom Trace

Allows the user to browse the directory structure for a custom trace DLL. When a DLL has been chosen, the path and file name of the DLL are entered in the Custom Trace DLL text box.

OK

Accepts changes to tracing and closes the Administrator dialog box.

Cancel

Closes the Administrator dialog box without accepting changes to tracing.

Apply

Accepts any changes that have been made to tracing without closing the Administrator dialog box. The Apply button is grayed if no changes have been made.

Working with Data Sources

Adding a Data Source

1. Choose Start > Programs > Loftware Labeling > Data Sources (ODBC).
2. Choose the Add button in the Data Sources dialog box
3. Select the driver's name from the installed ODBC Drivers list in the Add Data Source dialog box and click OK.
   (If the driver for the Data Source you are trying to add is not there, go back to the ODBC installation program and install it.)
4. Enter information to set up the data source in the ODBC Setup dialog box.
   (Note that the Description entry is optional and cannot exceed 79 characters.)

Adding a System Data Source

A data source can be set up with a system data-source name (DSN) that can be used by more than one user on the same machine. The system DSN can also be used by a system-wide service, which can then gain access to the data source even if no user is logged onto the machine.

1. Choose Start > Programs > Loftware Labeling > Data Sources (ODBC).
2. Choose the System DSN button in the Data Sources dialog box
3. Click the Add button in the System Data Sources dialog box.
4. Select the driver's name from the installed ODBC Drivers list in the Add Data Source dialog box and click OK.
5. Enter information to set up the data source in the ODBC Setup dialog box; click OK. (Note that the Description entry cannot exceed 79 characters.)

Modifying a Data Source

1. Choose Start > Programs > Loftware Labeling > Data Sources (ODBC).
2. Select the data source from the Data Sources list in the Data Sources dialog box
3. Choose the Setup button.
4. Enter information to set up the data source in the ODBC Setup dialog box. (Note that the Description entry is optional and cannot exceed 79 characters.)

Deleting a Data Source

1. Choose Start > Program Files > Loftware Labeling > Data Sources (ODBC).
2. Select the data source from the Data Sources list in the Data Sources dialog box.
3. Click Remove, and then click Yes to confirm the deletion.

Data Source Conversion

The 32-bit data sources used with the ODBC Desktop Database Drivers version 2.0 are automatically converted to new 32-bit data sources for version 3.5 drivers. No conversion is provided for 16-bit data sources. To change a 16-bit data source to a 32-bit data source, create a new 32-bit data source, and then (optionally) delete the old 16-bit data source. A 32-bit data source and a 16-bit data source cannot share the same name.

Hints and Troubleshooting ODBC

- If you are moving your label from one PC to another, and it is connected to an ODBC datasource, make sure that the PC you are moving to has the exact same datasource name in the ODBC Control Panel. If you are unsure of what datasource name was used, you may double click a field on your label that is connected to a database in design mode. The datasource name, table, and field are reported.

- Datasource names are not case sensitive.
- Be aware of illegal and reserved datasource names. Stay away from names like 'Table', 'Field', 'Database', 'Text', etc. Do not include special characters like \ , . - +.
- Fields that have been defined to be 'Number' in your database may be reported by ODBC in scientific notation. Use 'Text' or 'Character' fields whenever possible. This is a common occurrence when connecting to an Excel spreadsheet. See Knowledgebase Article #42531 on the Loftware Website.
- If you get a 'Type Mismatch' error when retrieving data, it means that the field column type in the database has changed since the connection was made. Reconnect the associated field on your label.
- Do not have a subdirectory with the same name as your database under the directory in which your database resides. This creates a 'Couldn't open file unknown' message.
- If using Microsoft Access, make sure that you have checked Read/Design permissions. If they are not checked, you may get a situation where you can see table names but no field names.
- Avoid using ODBC indexes whenever possible.
- When first choosing a datasource, you may get an error message. Continue by pressing either OK or Cancel, and try to connect to your database. Loftware Label Manager always accesses the first DSN by default. If the DSN is not valid, a warning alerts you to choose another DSN. The chosen DSN becomes the default DSN after connecting to your database.
- Records added to the database from an external location while printing from another may not be immediately available to the Loftware print modules.
- If you are using the Database-Image datasource and you get a message saying that the image is not found, try making the field length property of the image field 12 or more characters.
- See the Loftware Knowledge Base at www.loftware.com for information regarding ODBC, such as error messages, reserved words and more troubleshooting hints.

Appendix B Printers, Labels, and Tags

This Appendix describes Loftware-supported standard barcode and RFID printers. It also includes block and tag configuration information on the RFID HF and UHF tags available for supported RFID devices. (RFID Readers are described in the RRM guide.)

Label Printers and RFID Printers

Unless otherwise noted, the Loftware-supported RFID printers described in this section are UHF printers. These are printers that support encoding to UHF tag types.

Avery Information

This section provides information specific to the Avery family of printers. RFID Printers (currently supported or in development) are italicized in shaded table cells. The Avery printers include:

6404	6404 ALT	6405	6405 ALT
6406	6406 ALT	6408	6408 ALT
ALX 924	ALX 925	ALX 926	AP 4.4
AP 5.4	AP 5.4 ALT	AP 7.t textile	DPM 4
DPM 5	DPM 6	S-262	S-362
S-462	TDI	TDI ALT	TTK
TTK ALT	TTX 1050	TTX 1050 ALT	TTX 300 OFL
TTX 300 OFL-ALT	TTX 300 ONL	TTX 300 ONL-ALT	TTX 350
TTX 350 ALT	TTX 450	TTX 450 ALT	TTX 650
TTX 650 ALT	TTX 674	TTX 674 ALT	TTX 675
TTX 675 ALT	TTX 950	TTX 950 ALT	
6404 RFID	*6405 RFID*	*6406 RFID*	*6408 RFID*
ALX 924 RFID	*ALX 925 RFID*	*ALX 926 RFID*	*DPM 4 RFID*
DPM 5 RFID	*DPM 6 RFID*		

Updated printer information is available at Loftware's website, www.loftware.com. See Supported Printers on the Technical Support page.

Refer to the RFID Devices and Tag Types section for information on tag types supported by the Avery RFID printers.

Interface Cables (Parallel, Serial, and USB)

These printers usually have a serial interface and a parallel interface. Some models support USB and have NIC Ports.

Parallel Interface (standard interface) - Using a standard parallel cable, plug the hardware license key into a LPT parallel port, and connect the cable between the key and the printer.

Serial Interface (standard interface) – Check with manufacturer for cable information. The hardware license key is not part of the serial interface since it must always be plugged into an LPT parallel port.

USB Interface (standard or optional interface) – Use a standard USB cable between the printer and computer (or server), and plug in either a USB or Parallel hardware license key to one of the other ports on the computer.

Network Port – Included or optional on some printers.

Avery Options

Avery Options may be label-specific or printer-specific. Label Specific Options (LSOs) can be accessed when you click on the Label Options button from the Label Setup and Properties dialog (F5). Printer Specific Options (PSOs) can be accessed by clicking on the Options button while configuring the printer or by selecting the printer from the Device Configuration grid and clicking on the Options button. (Avery RFID options are also described in this section.)

Avery Label Specific Options

Label Options Section

Print Speed	The range of available print speed varies with the selected printer type. This setting controls the speed at which the stock moves during printing. The combinations of print speed and head temperature control the print quality of the label.
Feed Speed	This setting affects the speed at which the paper is fed when advancing over non-printing areas. This setting may affect printer throughput.
Head Temp	This allows you to control the darkness of the print.
Job End Flag Label	When this option is set, the last label printed in a batch is longer than the previous labels, signifying that it is the last label of the batch.
Label Inverse	Inverts the entire label, black prints as white, white space prints as black.

Printer Overrides Section

These settings override the Print Options Section in Printer Specific Options.

Print Mode

- *Batch Mode* - The whole surface of the label is printable.
- *Normal 1:1 Mode* - The first 18 mm of the label is not printable. The printing on the label is automatically shifted past the empty space.
- *Real 1:1 Mode* - Total surface of the label is printable, and the label is retracted after each label.

Character Set — Several printer languages are available that can print international characters that are not available in the U.S. character set. See the appendix section of your printer guide to find the corresponding hex codes used to select the desired character

Gap Offset — This command is for determining the beginning of the label when labels are printed with irregular gaps.

Cut Interval — This sets the number of labels to be printed before the stock is cut.

Dispense Position — This adjusts the distance the label is fed after printing.

Gap Overrides Section

This section, available only for the Avery 300 Offline printer, overrides the Printer Specific Options for Gap Offset and Gap Length.

Enable Gap Options — When checked, the following Gap settings are enabled:

- *Gap Offset* **-** This command determines the beginning of an irregular gap label.
- *Gap Length* **–** For continuous stock, this setting is used to add space between printed labels. The settings are in increments of 1 mm.

Avery RFID Options Section

These options apply to Avery RFID printers.

Use Label or Printer Options — This setting determines whether to use the options set in this section or those set in the Avery RFID Printer Specific Options. From this dialog, label setup options can be set when the Use Label RFID Options setting is selected.

RFID Tag Type — This is set to Autodetect, by default, which automatically determines the tag type. If Autodetect does not work, select one of the supported tag types: EPC Class 0, Alien EPC Class 1, and Philips UCODE EPC 1.19 tags.

Tag Position From Start of Label — This is the distance of the chip from the leading edge. This defaults to 60 mm.

Number of Write Retries per Label — This setting determines the number of times to retry in case of initial failure.

Number of Labels to Retry in Case of Tag Access Failure — This setting determines the number of retries before displaying an error message and requiring user intervention.

Verify — This is set to Off, by default. When Verify is enabled, it detects whether the tag about to be written to is an Alien tag or not.

Avery Printer Specific Options

Media Overrides Section

Stock Type

- *Die Cut* - Stock that has gaps between each label.
- *Continuous* **-** No gaps, notches, or perforations between labels.

Media Type

- *Thermal Transfer* (Ribbon) **-** Uses ribbon and non-heat sensitive label stock to print. The print head is activated as the label moves underneath, heating the ribbon material and melting it onto the label. To increase the quality of the print, decrease or increase the speed and/or the heat as necessary.
- *Direct Thermal* (No Ribbon) **-** Uses heat sensitive label stock without the ribbon. The print head is activated as the label moves underneath heating the label stock and activating the heat sensitive material in the stock causing darkening of the material. To increase the quality of the print, decrease/increase the speed and/or heat as necessary.
- *Ribbon Autoecon* On/Off **-** This command turns on the ribbon saver "auto economy" feature in supported printers. Printers that do not support this feature ignore the command. When this feature is turned on, the ribbon usage is economized by lifting when the minimum amount of white space is exceeded.

Gap Offset — This command determines the beginning of the label when printing labels with irregular gaps.

Gap Length — For continuous stock, this setting is used to add space between printed labels. The settings are in increments of 1 mm.

Cut Interval — This sets the number of labels to be printed before the stock is cut. This setting may yield poor results if you use a value that is not an even multiple of the Quantity and/or Duplicates value. For example: If Quantity = 2, Duplicates = 3, and Cut Interval = 2, your labels may print/cut in the following sequence:

```
Label 1 Duplicate 1
Label 1 Duplicate 2
<CUT>
Label 1 Duplicate 3
Label 2 Duplicate 1
<CUT>
Label 2 Duplicate 2
Label 2 Duplicate 3
<CUT>
```

Get Printer Status — This returns a message providing status on the printer. If there is a problem communicating with the printer, a corresponding error message is displayed.

Avery RFID Printer Options are described above.

Print Options Section

Do Not Send Options — When this is checked, Loftware does not send any Printer Specific Options or Label Specific Options to the printer.

Print Mode — The availability of the Print Modes depends on the printer.

- *Batch Mode* - The whole surface of the label is printable.
- *Normal 1:1 Mode* - The first 18 mm of the label are not printable. The printing on the label is automatically shifted past the empty space.
- *Real 1:1 Mode* - Total surface of the label is printable, and the label is retracted after each label.

Character Set — Several printer languages are available to print international characters that are not available in the U.S. character set. See the appendix section of your printer guide to find the corresponding hex codes used to select the desired character.

Dispense Options Section

Dispense Mode — This is only for printers with the dispenser attachment.

- *Batch Mode* - The entire label is not printable; the label is not retracted after feeding to the Dispense position.
- *1:1 Mode* - The entire label is printable since the label is retracted before printing the next label.

Dispense Position — Adjusts the distance the label is fed after printing.

Use Single Start function — Only one label is printed at a time. Printing is then suspended until the correct action has been taken. The required action depends on the settings of the printer, and is either the removal of the presented label or the use of a foot pedal.

Graphics Options Section

Store Images — This setting overrides the normal image behavior and always stores all images.

Images as Binary — All images are sent to the printer in binary format.

Custom Command Section

The Custom Command option is used when a non-typical printing function is required. Refer to the printer's programming manual for commands that may be used.

Send to Printer — This instructs the Loftware Label Manager system on when to send the EasyPlug Command.

Note: *Commands are printer model and firmware specific. Contact the appropriate printer representative for programming language questions.*

C.Itoh Information

This section provides information specific to the C.Itoh family of printers. Supported printers include:

C4	C4 TT	S4	S4 400dpi
S4 Plus	T4	T4 300dpi	

These C.Itoh printers use the same language as Datamax. Please refer to the Datamax Section for error messages and other information. Updated printer information is available at Loftware's website, www.loftware.com. See Supported Printers on the Technical Support page.

Citizen Information

This section provides information specific to the Citizen family of printers. The supported printers include:

CLP 1001	CLP 2001	CLP 4081	CLP 4121	CLP 6001
CLP 6002	CLP 6401	CLP 7001	CLP 7002	CLP7201E
CLP 7202E	CLP 7401			

These printers use the same language as the Datamax printers; therefore, see the next section for options, error messages, and other information regarding Citizen printers. Updated printer information is available at Loftware's website, www.loftware.com. See Supported Printers on the Technical Support page.

Datamax Information

This section provides information specific to the Datamax family of printers, as well as C.Itoh Printers. (C.Itoh printers use the same language as Datamax. See C.Itoh Printers) section for supported printers.) Newly supported printers are listed in bold print, RFID Printers (currently supported or in development) are italicized.

The Datamax printers include:

400	430	600	800
A-4212	A-4310	A-4408	A-4606
A-6212	A-6310	Allegro	Allegro 2
E-4203	E-4204	E-4304	I-4206
I-4208	I-4210	I-4212	I-4308
I-4406	I-4604	M-4206	M-4208
M-4306	Ovation	Ovation 2/3	PE4X
Prodigy	Prodigy 6.5	Prodigy Max	Prodigy Max 300
Prodigy+	ST-3210	ST-3306	Titan 6200
W-6208	W-6308	W-8306	XL
A-4212 RFID	*A-4310 RFID*	*A-4408 RFID*	*A-4606 RFID*
A-6212 RFID	*A-6310 RFID*	*I-4210 RFID*	*I-4212 RFID*
I-4308 RFID	*I-4406 RFID*	*I-4604 RFID*	

Updated printer information is available at Loftware's website, www.loftware.com. See Supported Printers on the Technical Support page.

Refer to the RFID Devices and Tag Types section for information on tag types supported by the Datamax RFID printers.

Interface Cables (Parallel, Serial, and USB)

These printers usually have a serial interface. A parallel interface is available as an option. Generally, newer models support USB, but this may or may not be standard.

Parallel Interface (optional interface) - Using a standard parallel cable, plug the hardware license key into a LPT parallel port, and connect the cable between the key and the printer.

Serial Interface (standard interface) - Use an RS232-C null modem cable. The hardware license key is not part of the serial interface since it must always be plugged into a LPT parallel port. Some Datamax may require other serial configurations.

USB Interface (standard or optional interface) – Use a standard USB cable between the printer and computer (or server), and plug in either a USB or Parallel hardware license key to one of the other ports on the computer.

Supported Features

Image Support - Images are downloaded and stored in the printer's image memory. Loftware Label Manager "remembers" images that are sent to the printer and only resends an image if the image is changed.

Supported Fonts - Datamax printers support a variety of native fonts and certain printers support TrueType fonts as well. Consult your printer manual for the specific native and TrueType font information.

Printer Control & Configuration - The Loftware Label Manager Design application allows you to configure printer settings that are saved in the label format using File | Media Setup.

Individual workstation printer settings may be configured using File | Devices from within the Design or any of the Print applications: On Demand, Range, and Batch.

Many of the settings in the printer do not take effect until the printer is re-booted. In the Printer Options dialog box, pushing the "Send To Printer" button sends the currently selected options to the printer. All Label-Specific options are sent to the printer every time a label is printed.

Datamax Options

Datamax Options may be label-specific or printer-specific. Label Specific Options (LSOs) can be accessed when you click on the Label Options button from the Label Setup and Properties dialog (F5). Printer Specific Options (PSOs) can be accessed by clicking on the Options button while configuring the printer or by selecting the printer from the Device Configuration grid and clicking on the Options button.

Datamax Label Specific Options

Print Speed	The range of available print speed varies with the selected printer type. This setting controls the speed at which the stock moves when printing. The combinations of print speed and head temperature control the print quality of the label.

Slew Rate	This setting affects the speed at which the paper is fed when advancing over non-printing areas. This setting may affect printer throughput.
Backup Speed	This controls the rate of label movement during backup positioning for start of print, cutting, or present distance.
Head Temperature	This allows you to control the darkness of the print. 10 is nominal; setting the temperature higher than 10 causes the label to print darker. Temperature settings lower than 10 cause the label to print lighter.

Label Overrides Section

This section contains options used for Cutters, Label Presentation, and Symbol Sets.

Advanced Options Section

Symbol Set	The Symbol Set option selects the scaleable font's symbol set. Consult the appendix section of your printer manual for a description of the character set.
Double-byte Symbol Set	This option allows you to choose a variety of Double-byte symbol sets, assuming your printer has the capability.
Clear Memory Module	When checked, the memory module is cleared each time a label format is sent. If unchecked, the memory module is not cleared before each label format is sent, thus potentially saving time. This option should only be used if enough memory is present to allow the module to remain uncleared when a format is sent.
Override Printer Setup	When checked, this allows you to override the Clear Memory setting in the PSO. This may be useful if you have a label that uses a lot of memory, and clearing the memory module is important.

WARNING! *Printing Blank Labels? If you are printing labels in thermal transfer mode, and blank labels are advancing out of the printer, try increasing the head temperature in* ***Label Options*** *(F5) and test print your label again. This symptom may occur if the ribbon being used requires hotter head temperatures to transfer the ink from the ribbon onto the paper substrate.*

Datamax Printer Specific Options

Label Options Section

Supply Type

- *Die Cut* - Stock that has gaps between each label.
- *Continuous* - No gaps, notches, or perforations between labels.
- *Mark Stock* - Black mark found opposite print side.

Buffer Mode

- *Double* - Selecting the double buffer mode instructs the printer to erase and format only incremental fields that have changed.
- *Single* - Selecting single buffer mode instructs the printer to erase and format both incremental fields and the rest of the label format.

This feature is only active when the labels being printed are less than half the maximum size of the printer's print buffer.

Ribbon Saver — This command turns the ribbon saver feature on in supported printers. The command is ignored by printers that do not support this feature. When the ribbon saver feature is turned on, the ribbon saver automatically lifts when the minimum amount of white space is exceeded

Forms Control Section

Settings for Tear Off, Form Edge, and Label Gap are in dots. Use the dots per inch (dpi) for your printer to find the proper value. Datamax settings increment each 1/100 of an inch.

Tear Off (Label Retract) — The Tear Off control enables the label retract feature of the printer. The printer advances the label "tear off" dots after the label is printed so the label can be torn off. It automatically retracts the label back to the proper start position before printing the next label.

The length should be set longer than the form edge.

Form Edge (Top of Form) — The Form Edge control determines where printing begins on your label. If you want the printer to print nearer to the leading edge of the label, decrease the form edge offset. If you want to move the start of print position away from the leading edge of the label (into the body of the label), increase the form edge offset.

Note: *In order for the new form edge settings to take effect, you must download the format 2 or 3 times. This is an idiosyncrasy of Datamax printers.*

Label Gap — For continuous stock, this setting is used to add space between printed labels. The settings available are in increments of 1/100 of an inch.

Column Offset — This command allows horizontal adjustment of the point where printing begins. This feature is useful when a single format must be printed on several different types of labels that already have printed information.

Row Offset — This command allows vertical adjustment of the point where printing begins. This feature is useful when a single format must be printed on several different types of labels that already have printed information.

Label Applicator — Enables integration with equipment that picks the label from the printer and places it on a package.

Label Present — The printer presents each label and waits for the label to be removed before continuing. While in "label present" mode, Loftware Label Manager receives status information from the printer indicating that a label is being sensed by the sensor and the printer does not print labels if a label is detected.

Internal Batch Mode — Internal batch mode enables communication between the Datamax printers and a dumb terminal. When internal batch mode is enabled, the Datamax printer directly sends information that is displayed on the terminal.

Cutter Engaged — This option turns the cutter on or off. Consult your printer manual for hardware availability.

Download Truetype Fonts — This option instructs Loftware Label Manager to download TrueType fonts to the Datamax printer's memory module. If this option is not enabled (or is not available for your model) and a TrueType font is selected, the TrueType font is sent to the Datamax printer in the form of a graphic. To download TrueTypes into the printer's memory, you must have the appropriate memory module and firmware versions, which are 2.01 or higher. Consult your manufacturer's manuals for details.

Note: *The Download TrueType Fonts function when enabled in Printer Setup does not download TrueType fonts into the printer's memory module when test-printing label formats from Loftware Label Manager. When this feature is enabled and TrueType fonts are defined on your label, test printing is extremely slow. Loftware suggests disabling the "Download TrueTypes" box temporarily while designing and test printing labels. This downloads TrueTypes as images, speeding up the test printing process.*

Once the label format is designed and you are ready to start using Loftware's On-Demand, Batch, or Range Printing modules, go back into the Printer Setup dialog box and enable TrueTypes. The very first time you print a label format using TrueTypes in one of these modules, the initial download time is extended while fonts are downloaded to the printer's memory module. Subsequent downloading of these fonts does not occur again until a new label format is requested.

Note: *Refer to your printer manual to determine whether a specific printer has native TrueType font downloading capabilities.*

Set Label Length — When enabled, the label length is sent to the printer. The length of the label is the height or width value specified in Label Specifications section of the Label Setup dialog box. Whether height or width is used is dependent on print orientation.

Pre 2.01 Firmware — Changes in firmware affect the commands that the printer accepts. Line properties including boxes and borders are affected. Check this box if your Firmware is Pre 2.01.

New Firmware — Checked by default. Allows for larger line widths in barcodes.

Advanced Options Section

Memory Module — The Memory Module option is used to specify which memory module(s) to download formats, graphics, and fonts to. The choices are: None, Module A, Module B, or Module C (Emulation Mode) Prodigy Plus Printers, for example, have an A or B Memory Module Card Slot in the front of the printer. Citizen Printers have an internal Memory Module C. If you have a Citizen Printer that you are running in Prodigy Plus Emulation, you would choose *Module C (Emulation Mode)* from the drop down list. Consult your printer manual or representative for more information about what modules are available for each printer model.

Clear Memory Module — When checked, the memory module is cleared each time a label format is sent. If unchecked, this prevents the memory module from being cleared before each label format is sent, thus potentially saving time. This option should only be used if enough memory is present to allow the module remain uncleared when a format is sent.

Symbol Set	The Symbol Set option selects the scaleable font's symbol set. Consult the appendix section of your printer manual for a description of the character set.
Scaleable Font Processor	This allocates scaleable font processor memory on the printer, but only if the option "send to printer" is checked. This option works with the XL, Ovation 2, Datamax Prodigy Max, Datamax Prodigy Max 300dpi, DMX 300, 800 and PE42.

Custom Command Section

The Custom Command option is used when a non-typical function is required when printing. Refer to the printer's programming manual for commands that may be used.

Note: *Commands are printer model and firmware specific. Contact the appropriate printer representative for programming language questions.*

RFID Options Section

Retry Attempts	This setting determines the number of times to retry in case of initial failure.

Datamax Printer Capabilities and Limits

Faster Throughput	For faster throughput always use a parallel port interface.
Printed Bar Code Does Not Match the Design	It is possible to define a combination of attributes, such as line width, ratio, etc., that the printer cannot produce, or might print in one orientation but not another. Under these conditions, the printer may print the "closest possible" bar code. This usually occurs when you define a bar code with line width 1. The printer sometimes "promotes" this to a line width 2 bar code, resulting in a printed bar code that is twice as long as desired.
Datamax: Incrementing/Decrementing Fields	When the printer is capable of doing the incrementing/decrementing internally, it is instructed to do so. This is called "Native Mode." When printing in Native Mode, control returns to the PC almost immediately. Loftware Label Manager does incrementing/decrementing in software when the printer cannot do it internally and sends down a different set of data for each label. This is called "Extended Mode." In Extended mode, the Printing dialog box shows the line "Printing Label *x* of *y*" and control does not return to the PC until the entire series of labels is printed.
Datamax: Label Size	The label size is used as a frame of reference. When you rotate your label, or when you rotate the printing of a label, it is imperative that Loftware Label Manager Design knows the exact size of the stock on which you are printing.

Datamax Error Messages

	Printer Turned Off	Cable Disconnected	No Stock	Print Head Up
LPT	Error message. Does not let you retry, label does not print.	Error message. Does not let you retry, label does not print.	Error message. Does not let you retry, label does not print.	Error message. Lets you retry, the label prints when the error is corrected.
COM	Error message. Lets you retry so the label prints	Error message. Lets you retry so the label prints.	Error message. Lets you retry so the label prints.	Error message. Lets you retry so the label prints.
USB	Received 'port not found' error. USB port not shown in Port combo of Printer |Connection	Error Message. Printing starts when cable reconnected.	Error Message. Printing resumes when stock added.	Received 'port not found' error. Label prints when head is put down.
Spooled Locally	No Loftware printer error but has a Windows printer error. Lets you retry, the label prints.	No Loftware printer error but has a Windows printer error. Lets you retry, the label prints.	No Loftware printer error but has a Windows printer error. Lets you retry, the label prints.	No Loftware printer error but has a Windows printer error. Lets you retry, the label prints.
Spooled to Shared	No error message. Prints the labels when the error is corrected.	No error message. Prints the labels when the error is corrected.	No error message. Prints the labels when the error is corrected.	No error message. Prints the labels when the error is corrected.
Spooled to PrintServer	No error message. Prints the labels when the error is corrected.	No error message. Prints the labels when the error is corrected.	No error message. Prints the labels when the error is corrected.	No error message. Prints the labels when the error is corrected.
Direct IP	No error message. Prints the labels when the error is corrected.	No error message. Prints the labels when the error is corrected.	No error message. Prints the labels when the error is corrected.	No error message. Prints the labels when the error is corrected.

Eltron Information

This section provides information specific to the Eltron family of printers. The supported Eltron printers include:

2044/46	2242	2348	2542	2622
2642	2722	2742	2746	2824
2844	3642	3742	Companion+	Eclipse
LP Plus	Orion	Strata	Transport	UPS 2348
UPS 2442	UPS 2443	UPS 2543		

Updated printer information is available at Loftware's website, www.loftware.com. See Supported Printers on the Technical Support page.

Interface Cables (Parallel, Serial and USB)

These printers usually have a serial interface. A parallel interface is available as an option. Generally, newer models support USB, but this may or may not be standard.

Parallel Interface (optional interface) - Using a standard parallel cable, plug the hardware license key into a LPT parallel port, and connect the cable between the key and the printer.

Serial Interface (standard interface) - Use an RS232-C null modem cable. The hardware license key is not part of the serial interface since it must always be plugged into a LPT parallel port.

USB Interface (standard or optional interface) - Use a standard USB cable between the printer and computer (or server), and plug in either a USB or Parallel hardware license key to one of the other ports on the computer.

Supported Features

Image Support - Images are downloaded and stored in the printer's image memory. Loftware Label Manager "remembers" images that are sent to the printer and only resends an image if the image is changed.

Supported Fonts - Some of the Native fonts supported by Eltron printers are:

8X12, 10X16, 12X20, 14X24, and 32X48

TrueType fonts are downloaded as graphics on the Eltron printers.

Printer Control & Configuration

The Loftware Label Manager Design application allows you to configure global printer settings, which are saved in the label format using File | Media Setup | Label Options.

Individual workstation printer settings may be configured using File | Devices | Options from within the Design or any of the Print applications: On Demand, Range, and Batch.

Many of the settings in the printer do not take effect until the printer is re-booted. In the Device **Options** dialog box, pushing the "Send To Printer" button sends the currently selected options to the printer. All Label Options are sent to the printer every time a label is printed.

Eltron Options

Eltron Options may be label-specific or printer-specific. Label Specific Options (LSOs) can be accessed when you click on the Label Options button from the Label Setup and Properties dialog (F5). Printer Specific Options (PSOs) can be accessed by clicking on the Options button while configuring the printer or by selecting the printer from the Device Configuration grid and clicking on the Options button.

Eltron Label Specific Options

Label Options Section

Print Speed	The range of available print speeds varies with the selected printer type. This setting controls the speed at which the paper is fed when printing. The combinations of print speed and head temperature control the print quality of the label. The range of available print speeds varies with the selected printer type.
Print Direction	This setting affects the orientation at which the label is printed. The Eltron printers can internally rotate the label 180 degrees. When Top is selected, the printer begins printing at the top of the label. When bottom is selected, the label is rotated 180 degrees and printing begins at the bottom.
Head Temperature	Allows you to control the darkness of the print. 5 is nominal, setting the temperature higher than 5 causes the label to print darker. Setting the temperature to lower than 5 causes the label to print lighter. Values from 0 to 7 for 2122/2142 and 0 to 15 for 2242/2044/2046/2642.
Form Number	Eltron printers have the ability to store multiple forms in memory. In order to store multiple forms, a unique name must be generated for each form. This option is used to provide a unique form name.

WARNING! *Printing Blank Labels? In some instances while printing labels in thermal transfer mode, blank labels advance out of the printer. If this happens, try increasing the head temperature in* ***Label Specific Options*** *(F5) and test print your label again. This symptom may occur if the ribbon being used requires hotter head temperatures to transfer the ink from the ribbon onto the paper substrate.*

Label Cut Options Section

Cutter	Use Printer Cut Options uses Cut Options set in the Printer Specific Options section. When enabled, an optional label cutter is set to cut a label after printing using settings specified in this dialog.
Cut Every	Allows the cutter to skip a given quantity of labels before cutting.
Cut Position	This command is sent to a printer to provide precise cut placement. The default is 100 dpi.

Eltron Printer Specific Options

Settings are in dots. Use the dots per inch (dpi) for your printer to find the proper value. For example, if your printer has 203 dpi and you want to set a skip distance of 1 inch, specify a value of 203 for the skip distance.

Label Options Section

Stock Type

- *Direct Thermal* (No Ribbon) - Uses heat sensitive label stock without the ribbon. The print head is activated as the label moves underneath heating the label stock and activating the heat sensitive material in the stock causing darkening of the material. To increase the quality of the print decrease/increase the speed and increase/decrease the heat as necessary.
- *Thermal Transfer* (Ribbon) - Uses ribbon and non-heat sensitive label stock to print. The print head is activated as the label moves underneath, heating the ribbon material and melting it onto the label. To increase the quality of the print decrease/increase the speed and increase/decrease the heat as necessary.

Supply Type

- *Die Cut* - Stock that has gaps between each label.
- *Continuous* - No gaps, notches, or perforations between labels.
- *Mark Stock* - Black mark found opposite print side.

Gap Length — The space in between labels. When printing on continuous stock, this setting can be used to add space between printed labels.

Offset Length — This is a setting found on Butterfly Labels. It sets the length between the top edge of the label, and the indented portion of the label. The Offset Length is set in dots per inch.

Reference Point Section

X Coordinate / Y Coordinate — These values are measured in dots. This command is used to move the reference point for the X and Y-axes. The reference point command functions similarly to the Label Home command found in File | Media Setup. Default reference points vary depending upon whether the selected print direction is top or bottom.

Options Section

Set Label Width — This command should be set on when labels narrower than the print head are printed. If the label width equals the print head width, you may leave Set Label Width off and the printer automatically centers the printing of the label.

Tear Off Mode — The tear off mode is the default mode.

Form Backup — This command instructs the printer to retract the label before printing.

Sensor Reverse This option reverses the Through Sensor Operation, which interprets a blockage of light as a gap. This option allows the through sensor to be used when printing transparent labels with a black stripe backing.

Dispense Sensor When enabled, the printer presents each label and waits for the label to be removed before continuing. On the P2242 printer, the feed button must be pressed to print the next label. Available on Orion, Strata, and P2242 only.

Dispense Tap When enabled, the printer presents each label and waits for the feed switch to be pressed before printing the next label. This mode is commonly used when printing multiple copies of liner-free labels. Available only on the P2242.

Batch Print & Cut When enabled, this option uses the “Print Quantity” and “Copies” values to control the cutter operations. The cut instruction is executed when a batch of jobs has completed printing.

Enable Dump Mode When enabled, the printer is set in diagnostic dump mode. Available on the P2242 only.

IRDA Interface Enables optional IRDA Interface. This option is only available on the P2242.

Cut Options Section

Label Cutter Enables an optional label cutter. When enabled, the cutter is set to cut a label after printing.

Cut Every The “Cut Every” settings range from 1 label to 250 + labels. The label is cut after the number specified. For example, if "2" is specified, the label is cut after every 2 labels.

Cut Position This command is sent to the printer to provide precise cut placement. The default is 100 dpi.

Memory Allocation Section

Formats If you have a very large number of fields on your label, you may need to increase this value; otherwise, the default of 5k should be fine.

Graphics To use images on your labels, you may need to increase the memory allocated for Graphics. This allows the printer to store the image files sent to it by Loftware Label Manager. If the value set is too small, Loftware Label Manager displays an error message.

Image Buffer The image buffer memory is the area where the active print image is temporarily stored. To calculate the exact memory needed using the following formula:

Printer Width = 2” - Label height in inches x 12 KB

Printer Width = 4” - Label height in inches x 22 KB

***Note**: You cannot allocate more memory than is installed in the printer. Many printers are shipped with 128K.*

Advanced Options Section

Character Set — This command selects a character set for printing. Consult the appendix section of your printer manual for a more complete description of supported character sets.

Custom Command Section

The custom command option sends printer commands otherwise not available in the Loftware Label Manager dialog boxes.

Eltron Printer Capabilities and Limits

Faster Throughput — For faster throughput always use a parallel port interface.

Printed Bar code Does Not Match the Design — It is possible to define a combination of attributes, such as line width, ratio, etc. that the printer cannot produce, or might print in one orientation but not another. Under these conditions, the printer may print the "closest possible" bar code. This usually occurs when you define a bar code with line width 1. The printer sometimes "promotes" this to a line width 2 bar code, resulting in a printed bar code that is twice as long as desired.

Eltron Incrementing/ Decrementing fields — When the printer is capable of doing the incrementing / decrementing internally, it is instructed to do so. This is called Native Mode. In Native Mode, control returns to the PC almost immediately.

Loftware Label Manager does incrementing/decrementing in software when the printer cannot do it internally and sends down a different set of data for each label. This is called "Extended Mode." In Extended mode the Printing dialog box shows the line "Printing Label x of y" and control does not return to the PC until the entire series of labels is printed.

Label Size — The label size is used as a frame of reference. When you rotate your label, or when you rotate the printing of a label, it is imperative that Loftware Label Manager Design knows the exact size of the stock on which you are printing.

Eltron Error Messages

	Printer Turned Off	Cable Disconnected	No Stock	Print Head Up
LPT	Error message. Does not let you retry, the label is not printed.	Error message. Does not let you retry, the label is not printed.	Error message. Does not let you retry, the label is not printed.	Error message. Allows you to retry, the label prints.
COM	Not Tested	Not Tested	Not Tested	Not Tested
USB	Received 'port not found' error. USB port not shown in Port combo of Printer |Connection	Error Message. Printing starts when cable reconnected.	Error Message. Printing resumes when stock added.	Error Message. An inconsistent result with printing when head is put back down.
Spooled Locally	No Loftware error message, but displays Windows error message. Allows retry, labels print.	No Loftware error message, but displays Windows error message. Allows retry, labels print.	No Loftware error message, but displays Windows error message. Allows retry, labels print.	No Loftware error message, but displays Windows error message. Allows retry, labels print.
Spooled to Shared	No Loftware error message but has Windows error message. Allows retry so labels print.	No Loftware error message but has Windows error message. Allows retry so the labels print.	No Loftware error message but has Windows error message. Allows retry so the labels print.	No Loftware error message but has Windows error message. Allows retry so the labels print.
Spooled to Print Server	No error message. All labels print after the printer is turn back on.	No error message. All labels print after the printer is reconnected.	No error message. All labels print after the printer is re-stocked.	No error message. All labels print after the print head is put down.
Direct IP	No error message. All labels print after the printer is turn back on.	No error message. All labels print after the printer is reconnected.	No error message. All labels print after the printer is re-stocked.	No error message. All labels print after the print head is put down.

EXE Information

Loftware supported EXE printers include:

MR400	MR400e	MR410	MR410e

These printers use the same language as Sato Printers. Please refer to the Sato Section for error messages and other information regarding EXE printers. Updated printer information is available at Loftware's website, www.loftware.com. See Supported Printers on the Technical Support page.

Fastmark Information

This printer guide section provides information specific to the Fastmark family of printers. Since these printers use both Datamax and Eltron Languages, the following table shows which printer section to look under regarding PSO's, error messages, and other information. Updated printer

information is available at Loftware's website, www.loftware.com. See Supported Printers on the Technical Support page.

FM402 PPLA	Refer to the section on Datamax Printers
FM402 PPLB	Refer to the section on Eltron Printers
FM403 PPLA	Refer to the section on Datamax Printers
FM403 PPLB	Refer to the section on Eltron Printers
FM4402 PPLA	Refer to the section on Datamax Printers
FM4402 PPLB	Refer to the section on Eltron Printers
FM4602 PPLA	Refer to the section on Datamax Printers
FM4602 PPLB	Refer to the section on Eltron Printers
FM4603 PPLA	Refer to the section on Datamax Printers
FM4603 PPLB	Refer to t the section on Eltron Printers
FM6602	Refer to the section on Datamax Printers

Fox IV Information

This section provides information specific to the Fox family of printers. Since these printers use Sato, Zebra, Datamax, Intermec and Printronix Printer Languages, the following table helps to know which printer section to look under regarding PSO's, error messages, and other information. Updated printer information is available at Loftware's website, www.loftware.com. See Supported Printers on the Technical Support page.

Sato OEM	**Datamax OEM**
FOXIV Model 6159	FOXIV Model 2000
FOXIV Model 6160	FOXIV Model 2000 300dpi
FOXIV Model 6185	FOXIV Model 3000
FOXIV Model 6190	FOXIV Model 3600
Zebra OEM	**Intermec OEM**
FOXIV Model 5113	FOXIV Model 4051 203dpi
FOXIV Model 5143	FOXIV Model 4051 406dpi
FOXIV Model 5173	**Printronix OEM**
FOXIV Model 6210	FOXIV Model 7002
FOXIV Model 6270	FOXIV Model 7003
RFID Printers Printronix OEM	
FOXIV SLPA 7204e RFID	*FOXIV SLPA 7304e RFID*)

See Printronix Options page for LSO and PSO settings.

Refer to the RFID Devices and Tag Types section for information on tag types supported by the FOXIV RFID printers.

IBM Information

This printer guide section provides information specific to the IBM family of printers. Newly supported printers are listed in bold print; RFID Printers are italicized in shaded cells. The supported IBM printers include:

IBM 4400-004 (203 dpi)	IBM 4400-004 (300 dpi)	IBM 4400-006 (203 dpi)
IBM 4400-006 (300 dpi)	IBM 4400-008 (203 dpi)	IBM 4400-008 (300 dpi)
Infoprint 6700 Model 5504-R40 (203 dpi)	Infoprint 6700 Model 5504-R40 (300 dpi)	Infoprint 6700 Model 5504-R60 (203 dpi)
Infoprint 6700 Model 5504-R60 (300 dpi)	Infoprint 6700 Model 5504-R80 (203 dpi)	Infoprint 6700 Model 5504-R80 (300 dpi)
Infoprint 6700 Model 5504-R40 (203 dpi) RFID	*Infoprint 6700 Model 5504-R40 (300 dpi) RFID*	*Infoprint 6700 Model 5504-R60 (203 dpi) RFID*
Infoprint 6700 Model 5504-R60 (300 dpi) RFID	*Infoprint 6700 Model 5504-R80 (203 dpi) RFID*	*Infoprint 6700 Model 5504-R80 (300 dpi) RFID*

These printers use the same language as Printronix Printers. Please refer to the Printronix Section for error messages and other information regarding IBM printers. Updated printer information is available at Loftware's website, www.loftware.com. See Supported Printers on the Technical Support page.

Refer to the RFID Devices and Tag Types section for information on tag types supported by the IBM RFID printers.

Imtec Information

This section provides information specific to the Imtec family of printers. Imtec Printers utilize the same Printer and Label Options as some of the other printers described in this appendix. Therefore, the following table lists Loftware's Imtec printer models, and the corresponding label/printer options used. The defaults are different, but the options and dialog boxes are the same. Updated printer information is available at Loftware's website, www.loftware.com. See Supported Printers on the Technical Support page. For the printers listed below, consult the section on Zebra printers.

Imtec Apply Pro w/90xiII	Imtec Value Pro w/140xiII
Imtec Apply Pro w/90xiII (600 dpi)	Imtec Value Pro w/3240
Imtec Apply Pro w/140xiII	Imtec Protector w/90xiII
Imtec Apply Pro w/170xiII	Imtec Protector w/90xiII (600 dpi)
Imtec Apply Pro w/4220E	Imtec Protector w/140xiII
Imtec Value Pro w/90xiII	Imtec Protector w/170xiII
Imtec Protector w/3440	

Intermec Information

This section provides information specific to the Intermec family of printers. RFID Printers are italicized in shaded cells. Supported Intermec printers include:

3100	4000	4100
4406	4630	8625/38
8635/36	8646	Easy Coder 3240
Easy Coder 3400	Easy Coder 3400B	Easy Coder 3400C
Easy Coder 3400D	Easy Coder 3400E	Easy Coder 3440
Easy Coder 3600	Easy Coder 4400	Easy Coder 4400B
Easy Coder 4400C	Easy Coder 4400D	Easy Coder 4420A/B
Easy Coder 4420e	Easy Coder 4440A/B	Easy Coder 4440e
Easy Coder 4830	Easy Coder 501E	Easy Coder 501XP
Easy Coder 601E	Easy Coder 601XP	Easy Coder 7421
Easy Coder 7422	Easy Coder 91	Easy Coder C4
Easy Coder E4	Easy Coder F2	Easy Coder F4
Easy Coder PC4 (EPL)	**Easy Coder PC41 (IPL)**	**Easy Coder PD4 (203 dpi)**
Easy Coder PD4 (300 dpi)	**Easy Coder PF4i (FP)**	**Easy Coder PF4i (IPL)**
Easy Coder PM4i (FP)	Easy Coder PM4i (IPL)	Easy Coder PX4i (FP)
Easy Coder PX4i (IPL)	Easy Coder PX6i (FP)	Easy Coder PX6i (IPL)
Easy Coder PM4i RFID (FP)	*Easy Coder PM4i RFID (IPL)*	

Refer to the RFID Devices and Tag Types section for information on tag types supported by the Intermec RFID printers.

Interface Cables (Parallel, Serial and USB)

These printers usually have a serial interface. A parallel interface is available as an option. Generally, newer models support USB, but this may or may not be standard.

Parallel Interface (optional interface) Using a standard parallel cable, plug the hardware license key into a LPT parallel port, and connect the cable between the key and the printer.

Serial Interface (standard interface) Use an RS232-C null modem cable. The hardware license key is not part of the serial interface since it must always be plugged into a LPT parallel port.

USB Interface (standard or optional interface) Use a standard USB cable between the printer and computer (or server), and plug in either a USB or Parallel hardware license key to one of the other ports on the computer.

Supported Features

Image Support - Images are downloaded and stored in the printer's UDC (image) memory. Loftware Label Manager "remembers" images that are sent to the printer and only resends an image if the image is changed.

Supported Fonts

Name	Notes
5x7 (1)	Magnify 1 to 90 horz. and vert.
7x9	Magnify 1 to 90 horz. and vert.
7x11	Magnify 1 to 90 horz. and vert.
10x14	Magnify 1 to 90 horz. and vert.
8 Point	Magnify 1 to 33 horz. and vert.
12 Point	Magnify 1 to 20 horz. and vert.
20 Point	Magnify 1 to 20 horz. and vert.
OCR A	Magnify 1 to 33 horz. and vert.
OCR B	Magnify 1 to 33 horz. and vert.
Outline Swiss (2)	0.005" to 2.94" (<1 to 212 points)
Outline Swiss Bold (3)	0.005" to 2.94" (<1 to 212 points)
Dutch Roman (3)	0.005" to 2.94" (<1 to 212 points)3240 3440 prtrs only
Pointable (4)	Point sizes 8, 10, 12, 16, 20, 24; Magnify 1 to 20 times
Pointable Bold (4)	Point sizes 6, 8, 10, 12, 16, 20, 24; Magnify 1 to 20 times

Notes: *(1) The 5x7 font is not available for the 4400 and 4406 printers. (2) For the 3400 printer, firmware version 1.2 or higher and extended memory are required to access the Outline Swiss font. For the 4100 printer, firmware version 2.4 or higher and extended memory are required to access the Outline Swiss font. (3) The Outline Swiss Bold and Dutch Roman fonts are currently not available with the 3100 printer. (4) The Pointable and Pointable Bold fonts are currently available for the 4400C, 3400B, 3600 and 3240 printers.*

Intermec - Printer Control and Configuration

The Loftware Label Manager Design application allows you to configure global printer settings that are saved in the label format using File | Media Setup and File | Media Setup | Label Specific Options.

Individual workstation printer settings may be configured using File | Devices from within the Design or any of the Print applications: On Demand, Range, and Batch.

Many of the settings in the printer do not take effect until the printer is re-booted. In the printer options dialog box, pushing the "Send Options" button sends the currently selected options to the printer. All Label-Specific options are sent to the printer every time a label is printed.

For 440x users, the File | Media Setup | Label Specific Options duplicate some of the functionality of the printers control panel. For 3400 and 4100 users, Loftware Label Manager provides the only way to configure many of the settings in the printer.

Intermec Options

Intermec Options may be label-specific or printer-specific. Label Specific Options (LSOs) can be accessed when you click on the Label Options button from the Label Setup and Properties dialog (F5). Printer Specific Options (PSOs) can be accessed by clicking on the Options button while configuring the printer or by selecting the printer from the Device Configuration grid and clicking on the Options button.

Intermec Label Specific Options

Format Number	Specifies the areas of RAM in which the label format is to be stored. This setting is provided for users who wish to "pre load" label formats to the printer. The valid values are 1-19.
Print Speed	The range of available print speeds varies with the selected printer type. Note that the printer may user a slower print speed than you specify in order to maintain print quality.
Head Temperature	Head Temperature allows you to control the darkness of the print. 0 is nominal, setting the temperature higher than 10 causes the label to print darker. Settings lower than 10 cause the label to print lighter.
Media Sensitivity	This number specifies the amount of heat required by the printhead to image a label. Look at the sensitivity label located on the label stock, and check the last three digits of the 15-digit number. These three numbers stamped on the label give you the number you use for this setting.
Cut Interval	This value is used to determine how many labels to print before cutting. This option is only used when "Use Label Specific Options Cut Interval" is enabled.

Note: *Loftware Label Manager now defaults to using the Cut Immediate command (<SO>) in conjunction with disabling the cutter (<SI>c0) per Intermec recommendations. Example: The cutter is enabled, (<SI>c1) and the printer prints a quantity of 5. The job is native, and the printer cuts after each label. The only way to enable the cutter to cut after a certain number of labels is to either:*

1. Set [INT44xx]CutImmediate=0
2. Use custom command of <SI>c1 in the PSOs.
Using #2 and unchecking Force Extended should allow the cutter to cut after the print job.

Read Knowledge Base article #42708 on the Loftware website for more information.

Use Label Specific Options Cut Interval	Enabling this feature disables any cutting options enabled in the Printer Options section under Label Handling. All cutter system information is overridden and stored directly in the label format.

Use Direct Graphics

Enables Direct Graphics mode on printers that support this option. The download time of the image is reduced, but images are sent for each label. This eliminates the graphic size limitations that are normally encountered when storing graphics in non-volatile RAM. The only size limitation when using direct graphics is the amount of memory installed on the printer.

Media Sensitivity Guide

The sensitivity for a particular type of media and ribbon is critical to achieving high quality printing. If the Media Type you are using is listed, select it, and then press "Apply" to achieve the recommended sensitivity setting.

Intermec Printer Specific Options

Advanced Options Section

Language

Several printer languages are available to print international characters that are not available in the U.S. character set. See the appendix section of your printer guide to find the corresponding hex codes used to select the desired character.

Enable IBM Translation

Enabling IBM Translation allows IBM compatible characters to replace standard ASCII characters based on the current printer language selected.

Custom Command

The custom command option sends printer commands otherwise not available in the Loftware Label Manager dialog boxes. For example, to switch an advanced printer to 86xx mode, send the custom command:

<ESC>c

Label Options Section

Media Type

- *Thermal Transfer* (Ribbon) - Uses ribbon and non-heat sensitive label stock to print. The print head is activated as the label moves underneath heating the ribbon material and melting it onto the label. To increase the quality of the print decrease/increase the speed and increase/decrease the heat as necessary.
- *Direct Thermal* (No Ribbon) - Uses heat sensitive label stock without the ribbon. The print head is activated as the label moves underneath heating the label stock and activating the heat sensitive material in the stock causing darkening of the material. To increase the quality of the print decrease/increase the speed and increase / decrease the heat as necessary.

Label Stock

- *Die Cut* - Stock that has gaps between each label
- *Continuous* - No gaps, notches, or perforations between labels
- *Mark Stock* – Stock with a black mark found opposite print side

Label Handling Section

Batch — Normal printing mode; labels are continuously printed and fed out of the printer.

Applicator — A specialty device that is integrated with the printer that allows labels to be picked up from the printer and placed on a product. Typical for assembly line production.

Self-Strip — Self-strip handling requires that the stock in the printer be properly fed through the self-strip attachment on the printer. Consult your Intermec manual or service technician for further assistance. While in self-strip mode, the printer presents each label and waits for it to be removed before continuing. The printer does not print labels if there is a label at the strip pin.

Cut Options Section

Cut or *Label Cutter* — These options require that a cutter be installed on the printer. With some Intermec printers, specifically the Intermec 4400, you may have to set certain options on the printer.

Cut Every — Allows the cutter to skip a given quantity of labels before cutting.

Cut Position — This command is sent to a printer to provide precise cut placement. The settings range from 70 to 130 dpi, the default is 100 dpi.

Forms Control Section

Settings are in dots. Use the dots per inch (dpi) for your printer to find the proper value. For example, if your printer has 203 dpi and you want to set a skip distance of 1 inch, specify a value of 203 for the skip distance.

Top of Form — This setting determines how close to the leading edge of the label printing occurs. Valid values are -20 to 4000, with 20 as the default setting. If you need to move the printing closer to leading edge of the printer, lower the value. If you need to move the printing away from the leading edge of the printer, choose a higher value. This setting is usually only critical when you are using small labels.

Max Label Length — Maximum label length increases the allowed printing length of the label. Valid values are 200 to 4800 dots. For example, a 203 dpi printer allows you to set a value from .5" to 24". Setting maximum label length to 2400 allows you to print a 12" label on an advanced Intermec printer. The default for maximum label length is 1000 dots.

Image Bands — The Image band setting is used by the printer to decide how much of the label's format to "image" before starting to print. If the image bands are set correctly, they can greatly improve printer throughput. However, if they are set incorrectly, they can degrade performance. The number of image bands available is determined by the amount of memory installed in your printer. Consult your printer manual for the available range of image bands. If this parameter is set to 0, the LLM uses the current printer setting.

Retract Distance	If this value is a non-zero value (try 1 or 2), the label is ejected this many "dots" after printing. The printer retracts, or backfeeds, before printing the next label. This is useful for advancing labels to the tear bar or cutter. Depending on your version of printer firmware, the label may only advance/retract a set amount when you are using die cut or mark stock, regardless of the value specified in the Retract parameter. Consult Intermec for information on possible firmware upgrades. If you are using die cut stock or mark stock and have a 3400 or 4100 printer, you must also check the "Feed After Print" option to enable the retract feature.
Skip Distance (Continuous Stock Only)	This setting is the distance to advance the label after all the fields have been printed. This setting is used to create white space between labels.
Label Rest Point	Label rest point adjusts the point at which the printer presents the labels for removal. This command is commonly used with the self-strip option. Label retract is available to retract the label back to the correct starting position for the next printed label.
Enable Label Retract	This feature causes the printer stock to move back into the printer under the printer head, print the label, then feed the label out to the tear off bar.
Feed After Print	Feed After print instructs the LLM to add a Form Feed (<FF>) after the label is printed. Generally, this is not necessary but it may be required for certain applications.
Set Label Width	(440x printers only) The 440x printers have a centered paper path so the label width is used to position the printing on the label. This option should be enabled in most cases.
SendOptions	The SendOptions checkbox defaults to checked. If unchecked, options are not included in the format from all applications (except design).

Intermec RFID Printer Options

Use Label or Printer Options	This allows you to use either the Intermec Label Specific Options or the options set in Printer Specific Options (PSOs).
Write Protect RFID Data	When checked, this protects the RFID data written to the tag from being overwritten.

Intermec RFID Setup Options Section

Send Setup Options to Printer	When checked, settings selected in this dialog will be used for printing the label.
Void Text	This is the text that will be printed across the label after write retries fail.
Labels to Retry on Tag Access Failure	This sets the number of attempts to write to the label after an unsuccessful try. Settings range from 0 to 10.

Intermec - Printer Capabilities and Limits

Faster Throughput	For faster throughput always use a parallel port interface.
Maximum Number of Fields	The maximum number of fields per label format is between 40 and 200, but this varies between printer models.
Maximum Image Size	The maximum size of any image varies among printers. The physical size of the image depends on the resolution of your printer. For 203 dpi printers, this is roughly 3" by 3". Note that the actual size of images that your printer can handle is determined by the amount of RAM installed in your printer.
Images Do Not Print	If images are displayed in Loftware Label Manager label design but do not print, the printer probably does not have enough memory to store the image. If you are using a 440x printer, a "Memory Overflow" message is displayed on the control panel. If you are going to be working with large images, you may need to add additional UDC RAM to the printer. Contact Intermec for information on memory upgrades for your printer.
Printed Bar code Does Not Match the Design	It is possible to define a combination of attributes, such as line width, ratio, etc, that the printer cannot produce, or might print in one orientation, but not another. Under these conditions, the printer may print the "closest possible" bar code. This usually occurs when you define a bar code with line width 1. The printer sometimes "promotes" this to a line width 2 bar code, resulting in a printed bar code that is twice as long as desired.
Disappearing Fields	The Advanced printers do not print any field with an invalid definition. For example, if you define a UPC-A bar code, which requires exactly 11 digits, and then provide alphabetic data at print time, the printer does not print the field. If your label test prints correctly but fields do not print in production printing, check your data carefully to make sure it is valid.
Using CODE 128	The Intermec Advanced printers use “auto-discriminating” Code 128 logic. This means that the printer decides which subset of Code 128 to use based on the data for the bar code. The printer automatically shifts subsets if necessary. While this technique produces the densest possible bar codes, it makes it difficult to implement a specification that requires explicit control of subsets or shifts between various subsets.

Note: *Refer to the section on how to build a UCC-128 symbology in this guide.*

Intermec Incrementing / Decrementing Fields	When the printer is capable of doing the incrementing/decrementing internally, it is instructed to do so. This is called Native Mode. When printing in Native Mode, control returns to the PC almost immediately. Loftware Label Manager does incrementing/decrementing in software when the printer cannot do it internally and sends down a different set of data for each label. This is called "Extended Mode." In Extended mode, the Printing dialog box shows the line “Printing Label *x* of *y*” and control does not return to the PC until the entire series of labels is printed.

Label Size The label size is used as a frame of reference when you rotate your label or when you rotate the printing of a label. It is imperative that Loftware Label Manager Design knows the exact size of the stock on which you are printing.

Intermec - Font Download and Re-map Instructions

Some Intermec printers are capable of storing fonts. Intermec provides a utility called PrintSet™ that allows TrueType Fonts (TTF) to be downloaded to a memory location.

Note: *Contact Intermec for information regarding your printer's capability of storing fonts and for the latest version of PrintSet™.*

Loftware Label Manager takes advantage of font re-map by substituting native fonts in the printer and re-mapping them to pre-downloaded TTF fonts. You may re-map and define up to two different fonts in the printer by choosing **Options | Preferences | Intermec** tab.

Note: *The Loftware Label Manager Font Re-Map capability is in addition to the True-Type font category selection in the Loftware Label Manager Design mode Properties Box.*

Downloading a True-Type Font from your PC

1. Determine which system font you wish to download. The fonts are typically stored in the WINDOWS\FONTS or WINDOWS\SYSTEM directory as .TTF files.
2. Run the **Intermec PrintSet™** utility program. (Make sure all the printer communication settings for PrintSet™ are the same as the Loftware Label Manager printer connection settings.)
3. Select the system font that you want to download under the **Configuration** menu.
4. Select a user definable font location in **printer memory** to download this font. (Typically, FONT03 to FONT06 are the first user-definable font locations.)
5. Select **To Printer** from the DataXfer menu. This option sends any current update information to the printer.

Important: *Do an* ***Options | Test Print*** *from PrintSet™ to verify that the font is successfully downloaded to the printer.*

Font Remap Instructions

1. From the Loftware Label Manager **Design Mode**, Select **Options | Preferences**.
2. Double-click on **Intermec** or click on the **+** symbol to open the drop-down list.
3. Click on **Remap First Font**.

An example of available options is shown to the right in the Preferences dialog box.

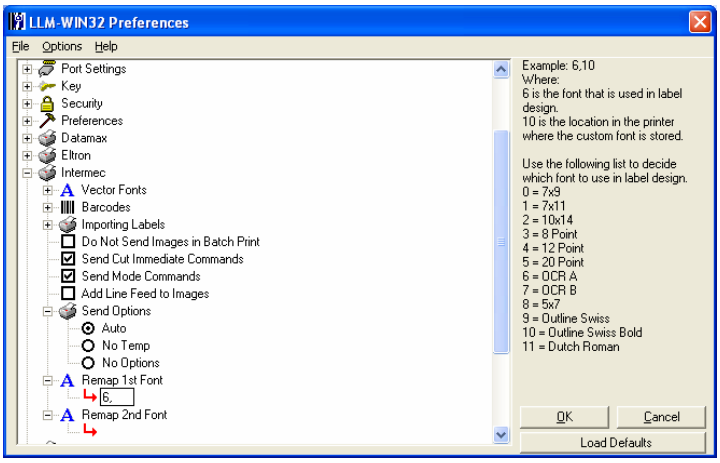


Figure B-A: Preferences dialog box

4. Type in a number from the list, a comma, and the location in the printer where you want the custom font to be stored.

5. Click on “Load Defaults,” choose “OK” or "Cancel."

Remapped QR barcodes allow embedding control characters (*Barcodes\PDF417 Substitution\Create QR Symbol Instead of PDF417* setting in the Intermec section of the Preferences dialog). Characters 0x80 to 0x255 used in ASCII formulas are handled properly in the print stream. Low ASCII characters that work for PDF or Datamatrix also work for per field remapped QR barcodes.

Intermec Error Messages

	Printer Turned Off	**Cable Disconnected**	**No Stock**	**Print Head Up**
LPT	Error message. Does not let you retry, the label does not print.	Error message. Does let you retry so the label prints.	Error message. Does let you retry so the label prints.	Error message. Does let you retry so the label prints.
COM	Error message. Does let you retry, the label prints.	Error message. Does let you retry, the label prints.	Printer stock error. Does let you retry, the label prints.	Print head error. Does let you retry, the label prints.
Spooled Locally	No Loftware printer error, but has a Windows printer error. Does let you retry, the label prints.	No Loftware printer error, but has a Windows printer error. Does let you retry, the label prints.	No Loftware printer error, but has a Windows printer error. Does let you retry, the label prints.	No Loftware printer error, but has a Windows printer error. Does let you retry, the label prints.
Spooled to Shared	No error message. The labels print when the error is corrected.	No error message. The labels print when the error is corrected.	No error message. The labels print when the error is corrected.	No error message. The labels print when the error is corrected.
Spooled to PrintServer	No error message. The labels print when the error is corrected.	No error message. The labels print when the error is corrected.	No error message. The labels print when the error is corrected.	No error message. The labels print when the error is corrected.
Direct IP	No error message. The labels print when the error is corrected.	No error message. The labels print when the error is corrected.	No error message. The labels print when the error is corrected.	No error message. The labels print when the error is corrected.

Meto Information

This printer guide section provides information specific to the Meto family of printers. These printers are created with Datamax language; therefore, see the Datamax section for error messages and other information regarding Meto printers. Updated printer information is available at Loftware's website, www.loftware.com. See Supported Printers on the Technical Support page.

The supported printers include:

mi-4206	mi-4212	mi-4308	mi-6208	mi-6308	mn-4203
ST3210					

Monarch Information

See the Paxar Section, as Monarch is now known as Paxar.

Novexx Information

This section provides information specific to the Novexx family of printers. The supported printers include:

ALX 924	ALX 925	ALX 926	Chess 4	Chess 5	Chess 6
Chess 8	Cobra OFL	Cobra ONL	DPM 4	DPM 5	DPM 6
Lion	Lion Plus	Ocelot	Puma	Puma Plus	Texxtile
Tiger	Tiger XXL	Xxtreme			

Updated printer information is available at Loftware's website, www.loftware.com. See Supported Printers on the Technical Support page.

Interface Cables (Parallel, Serial, and USB)

These printers usually have a serial interface and a parallel interface. Some models support USB and have NIC Ports.

Parallel Interface (standard interface) - Using a standard parallel cable, plug the hardware license key into a LPT parallel port, and connect the cable between the key and the printer.

Serial Interface (standard interface) - Check with manufacturer for cable information. The hardware license key is not part of the serial interface since it must always be plugged into a LPT parallel port.

USB Interface (standard or optional interface) - Use a standard USB cable between the printer and computer (or server), and plug in either a USB or Parallel hardware license key to one of the other ports on the computer.

Network Port - Included or optional on some printers.

Novexx Options

Novexx Options may be label-specific or printer-specific. Label Specific Options (LSOs) can be accessed when you click on the Label Options button from the Label Setup and Properties dialog (F5). Printer Specific Options (PSOs) can be accessed by clicking on the Options button while configuring the printer or by selecting the printer from the Device Configuration grid and clicking on the Options button.

Novexx Label Specific Options

Label Options Section

Print Speed	The range of available print speed varies with the selected printer type. This setting controls the speed at which the stock moves when printing. The combinations of print speed and head temperature control the print quality of the label.
Feed Speed	This setting affects the speed at which the paper is fed when advancing over non-printing areas. This setting may affect printer throughput.
Head Temp	This allows you to control the darkness of the print.
Job End Flag Label	When this option is set, the last label printed in a batch is longer than the previous labels, signifying that it is the last label of the batch.
Label Inverse	Inverts the entire label, black prints as white, white space prints as black.

Printer Overrides Section

These settings override the Print Options Section in Printer Specific Options.

Print Mode

- *Batch Mode* **-** The whole surface of the label is printable.
- *Normal 1:1 Mode* **-** The first 18mm of the label are not printable. The printing on the label is automatically shifted past the empty space.
- *Real 1:1 Mode* **-** Total surface of the label is printable, and the label is retracted after each label.

Character Set	Several printer languages are available that can print international characters that are not available in the U.S. character set. See the appendix section of your printer guide to find the corresponding hex codes used to select the desired character.
Gap Offset	This command is for determining the beginning of the label when printing labels with irregular gaps.
Cut Interval	Sets the number of labels to be printed before the stock is cut.
Dispense Position	Adjusts the distance the label is fed after printing.

Media Overrides Section

This section overrides the Printer Specific Options for Gap Offset, Cut Interval, and Dispense Position.

Gap Offset — This command is for determining the beginning of the label when printing labels with irregular gaps.

Cut Interval — Sets the number of labels to be printed before the stock is cut.

Dispense Position — Adjusts the distance the label is fed after printing.

Printer Overrides Section

These settings override the Print Options Section in Printer Specific Options.

Print Mode

- *Batch Mode* **-** The whole surface of the label is printable.
- *Normal 1:1 Mode* **-** The first 18mm of the label are not printable. The printing on the label is automatically shifted past the empty space.
- *Real 1:1 Mode* **-** Total surface of the label is printable, and the label is retracted after each label.

Dispense Position — Adjusts the distance the label is fed after printing.

Character Set — Several printer languages are available to print international characters that are not available in the U.S. character set. See the appendix section of your printer guide to find the corresponding hex codes used to select the desired character.

Novexx Printer Specific Options

Media Options Section

Stock Type

- *Die Cut* - Stock that has gaps between each label.
- *Continuous* **-** No gaps, notches, or perforations between labels.

Media Type

- *Thermal Transfer* (Ribbon) **-** Uses ribbon and non-heat sensitive label stock to print. The print head is activated as the label moves underneath, heating the ribbon material and melting it onto the label. To increase the quality of the print, decrease or increase the speed and increase or decrease the heat as necessary.
- *Direct Thermal* (No Ribbon) **-** Uses heat sensitive label stock without the ribbon. The print head is activated as the label moves underneath heating the label stock and activating the heat sensitive material in the stock causing darkening of the material. To increase the quality of the print, decrease/increase the speed and increase/decrease the heat as necessary.

Ribbon Autoecon — When on, this command turns the ribbon saver "auto economy" feature on in supported printers. Printers that do not support this feature ignore the command. When this feature is turned on, the ribbon usage is economized by lifting when the minimum amount of white space is exceeded.

Gap Offset — This command determines the beginning of the label when printing labels with irregular gaps.

Gap Length — For continuous stock, this setting is used to add space between printed labels. The settings are in increments of 1mm.

Cut Interval — This sets the number of labels to be printed before the stock is cut. This setting may yield unexpected results if you use a value that is not an even multiple of the Quantity and/or Duplicates value. For example: If Quantity = 2, Duplicates = 3, and Cut Interval = 2, your labels may print/cut in the following sequence:

```
Label 1 Duplicate 1
Label 1 Duplicate 2
<CUT>
Label 1 Duplicate 3
Label 2 Duplicate 1
<CUT>
Label 2 Duplicate 2
Label 2 Duplicate 3
<CUT>
```

Print Options Section

Do Not Send Options — When this is checked, Loftware does not send any Printer Specific Options or Label Specific Options to the printer.

Print Mode — The availability of the Print Modes depends on the printer.

- *Batch Mode* **-** The whole surface of the label is printable.
- *Normal 1:1 Mode* **-** The first 18mm of the label are not printable. The printing on the label is automatically shifted past the empty space.
- *Real 1:1 Mode* - Total surface of the label is printable, and the label is retracted after each label.

Character Set — Several printer languages are available to print international characters that are not available in the U.S. character set. See the appendix section of your printer guide to find the corresponding hex codes used to select the desired character.

Dispense Options Section

Dispense Mode — This setting applies only to printers with the dispenser attachment.

- *Disable* **–** The default setting, dispense mode disabled.
- *Batch Mode* - The entire label is not printable, the label is not retracted after feeding to the Dispense position.

- *1:1 Mode* - The entire label is printable since the label is retracted before printing the next label.

Dispense Position — Adjusts the distance the label is feed after printing.

Use Single Start function — Only one label is printed at a time. Printing is then suspended until the correct action has been taken. The required action depends on the settings of the printer, and is either the removal of the presented label, or the use of a foot pedal.

Graphics Options Section

These settings are mutually exclusive; they cannot both be set at the same time.

Store Images — This setting overrides the normal image behavior and always stores all images.

Images as Binary — All images are sent to the printer in binary format.

Custom Command Section

The Custom Command option is used when a non-typical printing function is required. Refer to the printer's programming manual for commands that may be used.

Send to Printer — This instructs the Loftware Label Manager system on when to send the EasyPlug Command.

Note: *Commands are printer model and firmware specific. Contact the appropriate printer representative for programming language questions.*

Paxar MPCL1 Information

This printer guide provides information specific to the Paxar (formerly Monarch MPCL1) printers: Loftware's supported models are:

9425	9445	9474

Updated printer information is available at Loftware's website, www.loftware.com. See Supported Printers on the Technical Support page.

Loftware Label Manager takes full advantage of the sophisticated features of the Paxar line of printers. The fixed portions of the label format are stored in the printer's memory to increase printing performance.

In Label Design, when you are test printing, the label format is downloaded every time. However, in Label Printing, the label format is only downloaded the first time. Afterwards, only the variable fields and any new variable images are sent to the printer. If you print the same variable image on two labels in a row, it is stored in the printer for the first label and not downloaded for the second. The image is deleted from the printer's memory if the image field is left blank for a printed label.

When doing a range print, or printing incrementing/decrementing fields, there may be a slight pause between labels while the printer images the new label. When the printer is capable of doing

the incrementing/decrementing internally, it is instructed to do so. If not, all variable data for each label is sent to the printer each time and Loftware Label Manager does all of the incrementing/decrementing.

Interface Cables (Parallel, Serial and USB)

These printers usually have a serial interface. A parallel interface is available as an option. Generally, newer models support USB, but this may or may not be standard.

Parallel Interface (optional interface) - Using a standard parallel cable, plug the hardware license key into a LPT parallel port, and connect the cable between the key and the printer.

Serial Interface (standard interface) - Paxar printers use an RS232-C null modem cable. The hardware license key is not part of the serial interface since it must always be plugged into a LPT parallel port.

USB Interface (standard or optional interface) - Use a standard USB cable between the printer and PC (or server), and plug in either a USB or Parallel hardware license key to one of the other ports on the computer.

Error Messages and Handling

When printing to a Paxar printer or using Printer Status to check the state of a Paxar printer, Loftware Label Manager may report the following error:

Printer Returned <error code>

Refer to your printer documentation to reference these error codes.

Example: `"Printer returned: DATA ERROR, error 571"`

Error 571 means that a UPC or EAN bar code received data whose length is invalid. You should check the length of your data.

Supported Features

Image Support Images are downloaded and stored in the printer's image memory. Loftware Label Manager "remembers" images that are sent to the printer and only resends an image if the image is changed.

Printer Control and Configuration

The Loftware Label Manager Design application allows you to configure printer settings that are saved in the label format using File | Media Setup and File | Media Setup | Label Options.

Individual workstation printer settings may be configured using File | Devices from within the Design or any of the Print applications: On Demand, Range, and Batch.

Many of the settings in the printer do not take effect until the printer is re-booted. All Label-Specific options are sent to the printer every time a label is printed.

Paxar MPCL1 Options

Note: *Paxar is formerly Monarch.*

Paxar MPCL1 Label Options

Horizontal Copies — The number of copies to print across the supply.

Cut/Take-Up

- *Use PSO Cut Option* **–** Uses the Cut/Takeup option selected in the Printer Options dialog box. Setting the cut option in the Label Options dialog box provides label specific cutting options. Whereas, setting the Cut/Takeup option in the Printer Options dialog box produces the same behavior for all labels printed on that specific printer.
- *Cut each label, except last* - This option only works with labels 4 to 8 inches in length.
- *Cut each label, including last* - This option only works with labels 4 to 8 inches in length.
- *No Cut/No Rewind* - When enabled, does not allow label to be cut, nor does it rewind after printing.

Format Number — The number of the Monarch Printer Control Language (MPCL) format to use. Refer to your MPCL documentation for more information.

Paxar MPCL1 Printer Options

Label Options Section

Cut/Takeup

- *Cut After Entire Batch Only* **–** When enabled, cuts after the last label in the batch has been printed.
- *No Cut/No Rewind* **–** When enabled, does not allow label to be cut, nor does it rewind after printing.
- *Cut each label, except last* - This option only works with labels 4 to 8 inches in length.
- *Cut each label, including last* **-** This option only works with labels 4 to 8 inches in length.

Note: *There are extensive differences in the cut behavior between Extended and Native Modes with the 98XX Series Printer. Information regarding the expected behaviors for each is found in Loftware website's Knowledge Base under* ***LLM > Printing > Printing Problems.***

Label Mode

- *Separator Off* **-** No separator prints between batch jobs.
- *Normal Length Separator***–** A normal length separator with 3mm black stripe prints between batch jobs.
- *Double Length Separator* **-** A double length separator (typically used for 924 or 925 stacker) prints between batch jobs. On the 920 stacker, a 3mm extra length tag prints between batch jobs.
- *Extra Length Tag* **–** A 3mm extra length tag with 6mm stripe prints between batches.

Paxar MPCL1 - UPC and EAN Bar Codes

Note: *Paxar is formerly Monarch.*

Using UPC/EAN Extensions

Loftware Label Manager allows you to specify that UPC/EAN bar codes should print with an extension. In addition, PAXAR printers automatically enable UPC/EAN extensions based on the length of the data.

Note*: The user must enter an 'extra' character of data when an extension is enabled. This 'extra' character is ignored by the printer. For example, using UPC-E with the +2 extension, the user must enter 9 characters of data, the first 6 of which are encoded in the bar code and the last 2 are encoded in the extension. The 7th character of data is ignored and replaced with the bar code check digit.*

Paxar MPCL2 Information

Note: *Paxar is formerly Monarch.*

This printer guide provides information specific to the Paxar printers. Recently supported printers are in bold print. RFID Printers (currently supported or in development) are italicized. The Paxar/Monarch printers include:

1465	9401/02/05	9403	9412/13E	9414E
9414M	9416	9446	9460	9490
9494	9805	9820	9825	9830
9835	9840	9850	9855	9856
9860	*Monarch 9855 RFID*	***Monarch 9855 RFMP***		

Updated printer information is available at Loftware's website, www.loftware.com. See Supported Printers on the Technical Support page.

Refer to the RFID Devices and Tag Types section for information on tag types supported by the Monarch (Paxar) RFID printer.

Loftware Label Manager takes full advantage of the sophisticated features of the Paxar/Monarch line of printers. The fixed portions of the label format are stored in the printer's memory to increase printing performance.

In Label Design, when you are test printing, the label format is downloaded every time. However, in Label Printing, the label format is only downloaded the first time. Afterwards, only the variable fields and any new variable images are sent to the printer. If you print the same variable image on two labels in a row, it is stored in the printer for the first label and not downloaded for the second. The image is deleted from the printer's memory if the image field is left blank for a printed label.

When doing a range print, or printing incrementing/decrementing fields, there may be a slight pause between labels while the printer images the new label. When the printer is capable of doing the incrementing/decrementing internally, it is instructed to do so. If not, all variable data for each label is sent to the printer each time and Loftware Label Manager does all of the incrementing/decrementing.

Printer Status (Serial only) - If the printer reports that everything is OK, the level of firmware in the printer is also displayed.

This function can be a very valuable tool. If there is a problem communicating with the printer, a corresponding error message is displayed.

Interface Cables (Parallel, Serial and USB)

These printers usually have a serial interface. A parallel interface is available as an option. Generally, newer models support USB, but this may or may not be standard.

Parallel Interface (optional interface) - Using a standard parallel cable, plug the hardware license key into a LPT parallel port, and connect the cable between the key and the printer.

Serial Interface (standard interface) - For the 9440 and 9494 printers, use the serial cable that came with your printer. If it did not come with a cable, consult the printer documentation for cable requirements.

USB Interface (standard or optional interface) - Use a standard USB cable, and plug in either a USB or Parallel hardware license key to one of the other ports on the computer.

For all other Paxar printers, use an RS232-C null modem cable. The hardware license key is not part of the serial interface since it must always be plugged into a LPT parallel port.

Error Messages and Handling

When printing to a Paxar printer or using Printer Status to check the state of a Paxar printer, Loftware Label Manager may report the following error:

Printer Returned <*error code***>**

Refer to your printer documentation to reference these error codes.

Example: "Printer returned: DATA ERROR, error 571"

Error 571 means that a UPC or EAN bar code received data whose length is invalid. You should check the length of your data.

Supported Features

Image Support - Images are downloaded and stored in the printer's image memory. Loftware Label Manager "remembers" images that are sent to the printer, and only resends an image if the image is changed.

Supported Fonts - The following are the standard fonts provided in the 9446, 9490, and 9494:

Name	Dots	Features
Reduced	8 by 18	magnify height and width from 1 to 7
Standard	16 by 24	magnify height and width from 1 to 7
OCR-A	16 by 23	magnify height and width from 1 to 7; no lowercase
BOLD	32 by 48	magnify height and width from 1 to 7; no lowercase

On the 9490 and 9494, the following additional fonts are available:

Pointable Vector	height and width values in points from 4 to 90
CG Times	height and width magnification from 1 to 7
CG Times Bold	height and width magnification from 1 to 7

Additional ROM Fonts - Additional ROM Font sets are available for Paxar printers. If an additional ROM set is installed in your printer, select File | Media Setup and choose the appropriate ROM Set in the Additional Installed Fonts list. Afterwards, the font choices for the selected ROM Set become available in Label Design. If after doing this, you try to print and the printer beeps or returns an error, you may have chosen a ROM Set that the printer does not really have.

Printer Control and Configuration

The Loftware Label Manager Design application allows you to configure global printer settings, which are saved in the label format using File | Media Setup and File | Media Setup | Label Options.

Individual workstation printer settings may be configured using File | Devices from within the Design or any of the Print applications: On Demand, Range, and Batch.

Many of the settings in the printer do not take effect until the printer is re-booted. In the printer options dialog box, pushing the "Send To Printer" button sends the currently selected options to the printer. All Label-Specific options are sent to the printer every time a label is printed.

Paxar MPCL2 Options

Note: *Paxar is formerly Monarch.*

Paxar MPCL2 Options may be label-specific or printer-specific. Label Specific Options (LSOs) can be accessed when you click on the Label Options button from the Label Setup and Properties dialog (F5). Printer Specific Options (PSOs) can be accessed by clicking on the Options button while configuring the printer or by selecting the printer from the Device Configuration grid and clicking on the Options button.

Paxar MPCL2 Label Specific Options

Print Speed — The range of available print speeds varies with the selected printer type. This setting controls the speed at which the paper is fed when printing. The combinations of print speed and head temperature control the print quality of the label.

Head Temperature — This allows you to control the darkness of the print. 0 is nominal; setting the temperature higher than 0 causes the label to print darker. Temperature settings lower than 0 cause the label to print lighter. Values from –390 to 156.

Cut Options

- *Use PSO* - Uses the cut option selected in the Printer Options dialog box. Setting the cut option in the Label Options dialog box provides label specific cutting options. Whereas, setting the cut option in the Printer Options dialog box produces the same behavior for all labels printed on that specific printer.
- *Cutter Off* - Disables the cut mechanism on the printer.
- *Cut After Every Tag* - Cuts before first tag, cuts each tag and cuts after last tag.
- *Cut After Every Batch* -Cuts before first tag, cuts after batch. Cuts in strips, not each tag.
- *Cut After Last Tag in Batch* – Cuts before first tag, cuts each tag, cuts after the last tag and feeds one or two tags past the printhead when it cuts the last tag in the last batch.
- *Cut Every Tag and After Batch* – Does not cut before the first tag in a batch, but cuts between each tag and after the last tag in the batch. The feed key must be pressed to feed the last tag out far enough to be cut.

Note: *When using the cutter with 98x Printers, please review Loftware Knowledge Base Article #49452 for information regarding different behaviors in Modes, Versions, and Cut Intervals.*

Backfeed Options

- *Use PSO Backfeed* - Uses the backfeed option selected in the Printer Options dialog box. Selecting a Backfeed Option in the Label Options dialog box applies label specific backfeeding behavior to each label, that is, all labels printed on that specific printer.
- *Disable Backfeed* - No backfeed motion occurs.
- *Enable Backfeed* - Backfeed motion occurs after each printed label. This option can be used on any printer without a knife.
- *Extended Backfeed* - An extended backfeed motion occurs after each printed label. This option is only valid on the 9835 and 9840 printers.

Paxar MPCL2 Printer Specific Options

Label Options Section

Ribbon Type

- *Normal* - The standard ribbon is installed.
- *No* **-** Ribbon is not installed. Direct thermal stock is required for this option.
- *High* **-** High Energy Ribbon is installed. In this mode, the print head is elevated to a higher temperature and therefore requires a ribbon that withstands high temperatures. A print speed of 2.5 IPS must be used with this ribbon. Peel mode should not be used with High Energy Ribbon. Please consult the Paxar Operator's Handbook for other limitations.

Supply Type

- *Center Aperture* **-** Hole, gap, or other type of opening found in the center of the stock.
- *Continuous* **-** No gaps, notches, or perforations between labels.
- *Die Cut Label* - Stock that has gaps between each label.
- *Mark Stock* **-** Black mark found opposite print side.

Label Mode

- *Continuous Operation* **-** Default mode for printing when peel mode is not desired or a rewind motor is not installed.
- *On-Demand Mode* - While in On-Demand mode the next label prints when the previous label is removed or when the feed button is pressed. The pause light blinks until all of the labels in the batch are printed. This option should be used with a peel module.
- *Rewind* **–** This option is peel mode with a rewind motor. The label backing should be properly fed and attached to the take up reel.

Cutter Mode

- *Cutter Off* **- –** Disables the cut mechanism on the printer.
- *Cut After Every Tag* **-** Cuts before first tag, cuts each tag, and cuts after last tag.
- *Cut After Last Tag in Batch* **-** Cuts before first tag, cuts each tag, cuts after the last tag and feeds one or two tags past the printhead when it cuts the last tag in the last batch.
- *Cut Every Tag and after Batch* **–** Does not cut before the first tag in a batch, but cuts between each tag and after the last tag in the batch. The feed key must be pressed to feed the last tag out far enough to be cut.

Forms Control Section

Horizontal Adjust	Horizontal offset (in printer dots) used during printing.
Supply Position	Supply (label) position at beginning of print job (-99 to 99).
Vertical Adjust	Vertical offset (in printer dots) used during printing.

Cut Adjust — Adjusts where the tag is cut. The printer adjusts the cut position according to the black marks on the supply. You may need to adjust for aperture supplies. Increase to move the cut up, decrease to move the cut down.

Slashed Zero — When checked, prints slashes through zeros.

Print Separator — When checked, prints a separator ticket.

- *Single* **-** Prints a single separator ticket (all printers).
- *Double* **-** Prints 2 separator tickets (9835 V5.0 or 9840 V6.0 only)

Note that *Double* is disabled in Version 7.0.29 for the 9835, 9840, and 9850 Models.

Old Firmware — Does not send new firmware options if checked. If you are having difficulty communicating with the printer, try selecting this option. By choosing this option, you disable status checking and other commands that are only supported in newer versions of the printer firmware. If using this option allows you to print, you may wish to consider purchasing a printer firmware upgrade. After your printer firmware upgrade is installed, you should uncheck this option.

Only Resend Fields that have changed — When checked, only the data that has been changed is re sent for printing.

Backfeed Control Section

Note: *The Paxar 9403, 9805, and 9856 printers do not support backfeed.*

Use Backfeed Control to enable or disable the backfeed option, set the dispense position and the backfeed distance. Backfeed works by advancing each printed label to the desired dispense position. Once that label is removed, the next label to be printed is backed up underneath the printhead. In continuous mode, only the last label in the batch is advanced to the dispense position. You may need to adjust the dispense position to allow labels to be removed, die cut labels to be removed easily, or to prevent them from falling off.

The dispense position and backfeed distance are optional parameters and do not have to be specified. However, they allow for greater precision when positioning the supply. You cannot change the backfeed distance while the printer is active.

Dispense Position — Adjusts the stopping point of the label. **50** to **200** dots (default 65 dots).

Backfeed Distance — Amount to move label backwards. **10** to **200** dots (default 65 dots). Cannot be greater than the dispense position.

The backfeed distance should equal the dispense position. An exception is if you are tearing instead of peeling. Then, the backfeed distance must be 30 dots (.150 inches) less than the dispense position. However, the result is a 30 dot non-print zone on your supply. The 30-dot difference accounts for improper tearing of butt cut supplies, because you do not want any exposed adhesive under the printhead. For more information, consult your Printer manual.

Font Style Section

Opaque The font and its envelope are opaque and blot out any lines or other fields that it overlaps.

Transparent The font and its envelope are transparent, and any lines or other fields that it overlaps are visible.

Advanced Options Section

Language Selects the language of the country chosen. Defaults to United States.

Symbol Set Selects the symbol set used for fonts, see Printer Appendix to determine the appropriate choice based on the application.

Graphic Storage Choose Flash or Volatile RAM or Non-Volatile RAM. Flash Memory is a special type of EEPROM that can be erased and reprogrammed in blocks instead of one byte at a time. Volatile RAM loses its contents when the power is turned off, whereas Non-volatile RAM retains its contents.

Note: *If the graphic is larger than .5 by .5 inches, the graphic is stored in Temporary Storage in the printer buffer, regardless of the PSO selected. The image is held only until it is sent.*

Custom Command Section

The Custom Command option is used when a non-typical function is required when printing. Refer to the printer's programming manual for commands that may be used.

Note: *Commands are printer model and firmware specific. Contact the appropriate printer representative for programming language questions.*

Paxar MPCL2: More Information

Note: *Paxar is formerly Monarch.*

Incrementing/Decrementing Fields

When the printer is capable of doing the incrementing/decrementing internally, it is instructed to do so. This is called "Native Mode." In Native Mode, control returns to the PC almost immediately.

Loftware Label Manager does incrementing/decrementing in software when the printer cannot do it internally and sends down a different set of data for each label. This is called "Extended Mode." In Extended mode, the Printing dialog box shows the line "Printing Label x of y" and control does not return to the PC until the entire series of labels is printed.

Label Size

The label size is used as a frame of reference. When you rotate your label or when you rotate the printing of a label, it is imperative that Loftware Label Manager Design knows the exact size of the stock on which you are printing.

UPC and EAN bar codes

Using UPC/EAN Extensions — Loftware Label Manager allows you to specify that UPC/EAN bar codes print with an extension. In addition, Paxar printers automatically enable UPC/EAN extensions based on the length of the data, as shown below

***Note**: The user must enter an 'extra' character of data when an extension is enabled. This 'extra' character is ignored by the printer. For example, using UPC-E with the +2 extension, the user must enter 9 characters of data. The first 6 characters are encoded in the bar code and the last 2 are encoded in the extension. The 7th character of data is ignored and replaced with the bar code check digit.*

Communications Settings

The communications settings for the Paxar 9490 and 9494 are controlled by software instead of switch settings.

***Note:** This feature is not supported on the Paxar 9446 printers.*

To set the printer's communications parameters, use the **Send Settings** button in the Printer Connection dialog box. Setting the printer's communications parameters is only possible immediately after turning on the printer.

To print out the current communication settings of these printers shut the printer off, depress the printer feed button, turn the printer on, and immediately release the feed button when the yellow LED light on top of the printer blinks. A label feeds out of the printer showing current settings.

For more information, see the "Configuring the Printer" section of your printer manual.

Creating a Price Field

To format a field as a price field:

Example: $19.68	Define field as variable and preface the name of the field with $$.
Example: $$Price	To have $19.68 printed on the label, supply 1968 as data.

Paxar Error Messages

Note: *Paxar was formerly known as Monarch.*

	Printer Turned Off	**Cable Disconnected**	**No Stock**	**Print Head Up**
LPT	Error message. Does not let you retry, the label does not print.	Error message. Does not let you retry, the label does not print.	No error message. Behaves as if the labels are printing. Press feed to get the first two labels; press feed again.	No error message. Behaves as if the labels are printing. Press feed to get the first two labels; press feed again.
COM	Error message comes up when you restart the printer. Allows retry, labels print.	Error message comes up when you reconnect the printer. Allows retry, labels print.	Error message comes up right away. Allows retry, the labels print.	Error message comes up right away. Allows retry, the labels print.
Spooled Locally	No Loftware error message, but a Windows printer error is displayed. All labels print.	No Loftware error message, but a Windows printer error is displayed. All labels print.	No Loftware error message, but a Windows printer error is displayed. All labels print.	No Loftware error message, but a Windows printer error is displayed. All labels print.
Spooled to Shared	No error message. All labels print.	No error message. All labels print.	No error message. Labels print after stock is added.	No error message. Labels print after the print head is put down.
Spooled to PrintServer	No error message. All labels print.	No error message. All labels print.	No error message. Labels print after stock is added.	No error message. Labels print after print head is down.
Direct IP	No error message. All labels print.	No error message. All labels print.	No error message. Labels print after stock is added.	No error message. Labels print after print head is put down.

PCL5 Information

PCL is not a Printer Family per se, but is listed as a Loftware Native Driver among the available printers. Hewlett-Packard® created PCL (Printer Control language), but it is used by a number of other printer manufacturers as well. Loftware's PCL driver operates with any printer that supports PCL5.

The native PCL fonts enabled for PCL5 are Univers, CG Times, Courier, and Arial. Univers is the default font for the driver.

PCL5 Options

PCL5 Printer Specific Options

Printer Options with PCL5 printers are different from most of the other supported printers, as you can see from the following figure. The figure displays default options:

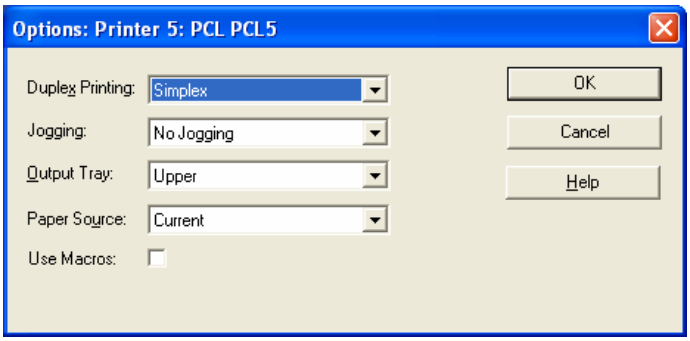


Figure B-B: PCL5 Printer Options dialog box

Duplex Printing

- *Simplex* – Simplex mode prints images and characters on one side of a sheet/page.
- *Duplex Long Edge* – Prints images and characters on two sides of a sheet/page. Long means that the duplexed pages are bound along the length of the physical page.
- *Duplex Small Edge* - Prints images and characters on two sides of a sheet/page. Short means that the duplexed pages are bound along the width of the physical page.

Jogging

Printers that support this feature provide a means of identifying one print job from others by slightly offsetting the first label of each print job.

- *First Label in Job* – When a print request is initiated, the paper tray is shifted slightly or "jogged" before the first label or page prints.
- *No Jogging* – Jogging is disabled. There is no print job separation even for printers that support this feature.

Output Tray

- *Upper* – The default output bin for paper.
- *Lower* - Prints to the lower output bin. If this command is received by a printer that does not contain the dual-bin feature, it is ignored.

Paper Source

- *Auto* – This option feeds paper from a printer-specific tray.
- *Current* – Prints the current page from the location last used.
- *Envelope Manual* – Prints the envelope as manually inserted on the top of the tray.
- *Envelope Feeder* – This option prints using stock from optional envelope feeder tray.
- *Manual* – This option allows manual insertion of paper.
- *Optional Source* – This allows insertion of stock from an optional location that may exist on a specific printer.

Use Macros — If this is checked, Loftware uses the PCL5 Macro commands to store fixed fields, lines and boxes. Depending on your labels, this may significantly speed printing throughput, especially when there are large fixed images, text, or barcode fields on your label.

PCL Label Specific Options

The only label specific option available sets the page size, such as 8 ½ x 11 (default), A4, A5, etc.

PCL5 USB Issues

USB Printing and PCL5

Loftware tested printing to an USB-connected HP LaserJet 1200 series PCL 5+ printer using various Loftware applications such as Design Mode, On-Demand Print, etc. The results are documented in very general terms below. Your results depend on the printer manufacturer and printer you are using, and are quite likely to be different.

Loftware Applications are designed to open, write, and then close the USB Printer port when processing a print request. As long as the USB Printer allows this to happen, printing continues without incident. If the printer is not connected, or is turned off, the Loftware Application is not able to open the port, a message is displayed or an error condition is created which states "Error Opening Port (printer name)." If the printer is out of stock and it shuts the USB port down, the Loftware Application is not able to write to the port. A message is displayed, or an error condition is created stating "Error Writing to Port (printer name)." If the printer is out of stock, but the printer has a buffer, an error message may not display until the buffer is full.

USB Printing and the LPS

Various expected behaviors occur when printing to the LPS using a USB Printer with error conditions (i.e.; Paper Out, etc.). After the printer buffer is full, jobs stay in pending folder. After about 2 minutes, the Status displays media problem or "Error writing to/opening port (Printer Name)" message. After correcting the error condition, the jobs in the buffer print out, and the pending job completes.

It is important to read all available printer manufacturer information on USB Printing with your printer before attempting to print using Loftware applications. Remember to install any USB Drivers *before* connecting, configuring or printing in Loftware.

Pressiza Information

The Pressiza printers supported by Loftware include:

406+	408	412-64	512-64
610-64	7401 406-400+	808-64	F-422
F-428	F-438	F-446	F-464
TX408	XT-10		

These printers use the same language as Datamax Printers; therefore, see the Datamax section for error messages and other information regarding Pressiza printers. Updated printer information is available at Loftware's website, www.loftware.com. See Supported Printers on the Technical Support page.

Printronix Information

This printer guide provides information specific to the Printronix printers, and IBM OEM Printronix printers. (See the IBM Section for a list of IBM printers). Newly-supported printers are shown in bold text. RFID Printers (currently supported or in development) are italicized. The supported Printronix printers include:

L1024	L1524	L5020	L5031
L5035	L5520	L5535	P5005B
P5010	P5205B	P5210	P5215
P5220	SL5204	SL5204r	SL5304
SL5304r	SLPA5204r	SLPA5304r	SLPA7204e
SLPA7304e	T5204	T5204r	T5206
T5206r	T5208	**T5208r**	T5304
T5304r	T5306	**T5306r**	T5308
T5308r	*SL5204 RFID*	***SL5204r RFID***	*SL5304 RFID*
SL5304r RFID	***SL5306r RFID***	***SLPA5204r RFID***	***SLPA5304r RFID***
SLPA7204e RFID	*SLPA7304e RFID*	*T5204 RFID*	***T5204r RFID***
T5206r RFID	***T5208r RFID***	*T5304 RFID*	***T5304r RFID***
T5306r RFID	***T5308r RFID***		

To view updated Printronix information, go to Loftware's website, www.loftware.com. See the section on Supported Printers on the Technical Support page.

Refer to the RFID Devices and Tag Types section for information on tag types supported by the Printronix RFID printers.

Printer Status

This function can be a very valuable tool when printers are connected using the Serial Interface. If there is a problem communicating with the printer, an error message is displayed. By default, Printer Status is disabled for Printronix printers. To enable Printer Status, you must first enable "One Char Enquiry" on the printer via the menu controls, and then uncheck the "Disable Status Checking" check box in the Printer Connection dialog box in Loftware.

Interface Cables (Parallel, Serial and USB)

Parallel Interface - Using a standard parallel cable, plug the hardware license key into an LPT parallel port, and connect the cable between the key and the printer.

Serial Interface - For all Printronix printers, use an RS232-C null modem cable. The hardware license key is not part of the serial interface since it must always be plugged into an LPT parallel port.

USB Interface (standard or optional interface) - Use a standard USB cable between the printer and PC (or server), and plug in either a USB or Parallel hardware license key to one of the other ports on the computer.

Printronix Options

Printronix Options may be label-specific or printer-specific. Label Specific Options (LSOs) can be accessed when you click on the Label Options button from the Label Setup and Properties dialog (F5). Printer Specific Options (PSOs) can be accessed by clicking on the Options button while configuring the printer or by selecting the printer from the Device Configuration grid and clicking on the Options button. (Printronix RFID options are also described in this section.)

Printronix Label Specific Options

Label Options Section

Print Speed (IPS)	The range of available print speeds in inches per second (IPS) varies with the selected printer type. Note that the printer may use a slower print speed than you specify in order to maintain print quality.
Slew Rate (IPS)	This setting affects the speed in inches per second (IPS) at which the paper is fed when advancing over non-printing areas. This setting may affect printer throughput.
Darkness	This allows you to control the darkness of the print. -3 is nominal; setting the temperature higher than -3 causes the label to print darker. Temperature settings lower than -3 cause the label to print lighter. The valid values range from -15 to 15.
Format Number	Specifies the areas of RAM in which the label format is to be stored. The valid values are 1-100.

Print Quality — This setting only applies to the P5000 Series line matrix printers and is somewhat similar to the darkness control on the thermal transfer printers.

- *Best* - prints the darkest images, but at the slowest speed.
- *High* - prints at a faster speed than Best, but the characters are not as dark.
- *Data Processing* - This mode should be set if the highest speed is desired, printing is not as dark as High.

Label Overrides Section

Symbol Set

- *Use Printer Symbol Set* – Label uses settings from Printer Specific Options.
- *User Defined* – Label uses an added CodePage.
- Other Symbol Sets (Arabic to Turkish)

Send Options

- *Use Printer Setup* - Label uses settings from Printer Specific Options (PSO).
- *No* – Overrides any Send Options set in PSO, nothing set.
- *Yes* – Overrides 'Do Not Send' Option in PSO

Cutter — Enables cutter for this label only.

Cut Interval — Sets Cut Interval for this label only.

Printronix Printer Specific Options

Since none of the printer options are sent from Loftware, the Printer must be properly configured through its front panel for this to work. Be sure to enable HOST FORM LENGTH on the printer.

Media Options Section

Stock Type (Gap Sense) — This option specifies the method used to detect the media top.

- *Continuous Stock* **-** Continuous media with no black stripe and no gap is being used.
- *Die Cut Stock* **-** Media with a space or "gap" between die cut labels is being used, where the media backing or liner is present between labels. Also for media with pre-punched notches or holes.
- *Mark Stock* **-** Media with a horizontal black stripe on the backside of the liner is being used.
- *Advanced Gap* -Media being used has liner gaps between die cut labels with black background.
- *Advanced Notch* – Media being used has notches or holes that interrupt a black vertical line on the underside of the media.

Media Type (Print Mode)

- *Direct* **-** Direct Thermal type of printing (no ribbon) requires special heat sensitive media.
- *Transfer* **-** Thermal Transfer type of printing (ribbon installed).

Media Handling This option specifies how the printer handles the media.

- *Continuous operation* **-** Printer prints on the media and sends it out the front.
- *Cut Each Label* **-** Media is cut after printing each page (requires optional cutter).
- *Peel-Off* **-** Prints and peels die-cut labels from the liner without assistance. The printer waits for you to take away the label before printing the next one. The label backing is rewound on the internal rewinder. A "LABEL PRESENT/Remove Label" message reminds you to remove the label before the next one can be printed.
- *Tear-Off* **-** After each label is printed, the printer positions the label over the tear-off bar and waits for you to tear-off the label before printing the next one. A "LABEL PRESENT/Remove Label" message reminds you to remove the label before the next one can be printed.
- *Tear-Off Strip* **-** Printer prints on the media and sends it out the front until the print buffer is empty, then positions the last label over the tear-off bar for removal.

Forms Control Section

Cut Interval	Sets the printer to cut after the specified number of pages (requires optional cutter).
Tear Off Pause Count	Sets the printer to pause after the specified number of pages. The paper must be completely torn before the printer resumes normal operation.
Offline Pause Count	Sets the printer to pause (offline) after the specified number of physical pages printed.
Auto Eject Labels	Specifies whether the printer ejects the last page of a job if the page is not full. When this setting is checked, the printer ejects the last page after the entire job has been processed and printed. By default, this setting is deselected; the printer does not eject the last page unless you send a Page Eject command or until the printer receives another print job.
Form Feed at Top of Form	Specifies whether the printer performs a Form Feed when a Form Feed command is received and the printer is already at the Top of Form. When this setting is checked, the printer advances media from the present Top of Form position to the next Top of Form position upon receipt of a Form Feed command, causing a blank form. The factory default is Enable. When this setting is deselected, the printer does not advance media from the present Top of Form position to the next Top of Form position upon receipt of a Form Feed command.
Host Form Length	Determines how the physical label size is affected upon an EXECUTE command.

The physical label length changes to match the form length (defined in CREATE mode). The physical label size remains at the new setting until another EXECUTE command is received, or the PRINTER CONTROL menu settings are changed. The factory default is Enable.

Forms printed in EXECUTE mode do not change the physical label size. Therefore, the size of the form (defined in CREATE mode) must fit within the current label dimensions, or errors may occur.

Note: *Changing the form length via the EXECUTE command changes the ASCII Emulation logical dimensions.*

Field Options Section

Print UPC Descenders — This parameter allows you to print bar code descenders when human readable data is not present in the UPC/EAN bar codes

- *Always* **-** UPC/EAN bar codes are printed with descenders, even if there is no human readable data.
- *With HR Enabled* **-** UPC/EAN bar codes are printed with descenders only when the Human Readable text field is enabled.

Force Uppercase — When checked, any lower case data supplied for text fields are converted to uppercase. When unchecked, lower case data supplied for text fields print in lowercase.

Slashed Zeros — This option applies to all character sets except OCR A and OCR B. When checked, zeros are printed with a slash. When unchecked, zeros are printed without a slash.

Advanced Options Section

Symbol Set — Accesses one of the printer's internal multinational or international character sets.

Note: *See the Templates and Wizards chapter for further information on this.*

Error Report — This option sets the error reporting capability of the printer.

- *Debug* **-** Puts the printer in debug mode whenever a label format is defined. Each line of the format is printed along with any printer language errors.
- *Fault* **–** If a printer language error occurs, the error is printed on the media, the message "IGP Error" is displayed on the front panel, and then the printer goes offline.

The error must be cleared before the printer can resume normal operation.

- *Off* **–** The printer does no physical boundary checking whatsoever. Fields are clipped if they are beyond the page boundaries.
- *On* **-** Full physical boundary checking is performed. Any field that falls off the current page is reported as an error.

PPM/PMU	*PPM* = Printronix Printer Manager – Printronix version, only works with Printronix printers *PMU* = Print Manager Utility – IBM version, only works with IBM printers The PPM/PMU is a program that provides status and control of multiple printers of the associated type on a network. To use this Loftware feature, enter the IP Address of the computer where the PPM/PMU is running, and click the **Browse** button. This feature assumes you have a browser on your system and that the PPM/PMU is running on the PC whose IP Address is displayed. If you are successful, a login screen is displayed where you can enter your credentials and configure the system. Refer to your Printronix Manual for information on the actual workings of the PPM/PMU. The IP Address is persistent across all IBM/Printronix printers; each time you enter any IBM / Printronix PSO dialog, the display reflects whatever was typed in that box the last time the IBM/Printronix PSO dialog was closed.
Don't Send Options	When this is checked, Loftware does not send *any* PSOs or LSOs to the printer. This is useful if you have an older printer or a printer with an older emulation that does not support one or more of the current commands that Loftware sends.

Custom Command Section

The Custom Command box allows you to add additional commands to the data stream that is sent to the printer. Please consult your IGP/PGL manual for custom command syntax.

Note: *The custom command is sent after the ~CONFIG command and before the ~CREATE command.*

Printronix RFID Options Section

This section applies to Printronix RFID printers.

Use Label or Printer Options	This allows you to use either the Label Specific Options settings or those set in Printer Specific Options (PSO).
Single Protocol Firmware	Changes in firmware affect the commands that the printer accepts. Check this box if your firmware is single protocol.
Send Options to Printer	This will use the currently selected options.
Tag Type	Auto Detect determines the tag type. Select "No Tags" if none is available.
Passcode Write Retries	Number of passcode write retries.

Printronix Error Messages

	Printer turned Off	Cable disconnected	No stock	Print Head up
LPT	Error message: “Printer not Initialized” No retry allowed	Error Message. Lets you retry to Print label.	Error Message. Lets you retry so you can print label.	Error Message lets you retry so you can print Label.
COM	Error Message. Lets you retry, label prints.	Error Message. Lets you retry, label prints.	Error Message. Lets you retry, label prints.	Error Message. Lets you retry, label prints.
Spooled Locally	Windows error message: “Device not connected” Allows retry, reprints when error corrected.	Windows error message: “Device not connected” Allows retry, reprints when error corrected.	Windows error Message. Allows retry, reprints when error corrected.	Windows error Message. Allows retry, reprints when error corrected.
Spooled To Shared	No error message. Labels print when error is corrected.	No error Message. Labels print when error is corrected.	No Error Message. Label Prints when error is Corrected.	No error Message. Label Prints when error is corrected
Spooled to PrintServer	No Error Message. The labels print when error is corrected	No Error Message. The labels print when error is corrected	No Error Message. The labels print when error is corrected	No Error Message. The labels print when error is corrected
Direct IP	No error message. The labels when the error is corrected.	No error message. The labels when the error is corrected.	No error message. The labels when the error is corrected.	No error message. The labels when the error is corrected.

Quick Label Information

Loftware's supported Quick Label printers include:

Pronto 442	Pronto 472	Pronto 474	Pronto 843

These printers use the same language as Datamax Printers; therefore, pertinent information regarding printer options, label options, and error messages may be found in the Datamax section in this appendix.

Sato Information

This section of the printer guide provides information specific to the Sato family of printers. Newly-supported printers are shown in bold text. RFID Printers (currently supported or in development) are italicized in shaded cells. Updated printer information is available at Loftware's website, www.loftware.com. See Supported Printers on the Technical Support page. Supported Sato printers include:

CL408	CL408e	CL412	CL412e	CL608	CL608e
CL612	CL612e	CT400	CT410	CX200	CX208
CX212	**CX400**	M10e	M5900	M5900E	M5900RV
M5900RVe	M84 Pro 203, 305, 609 dpi	M8400	M8400RV	M8400RVe	M8400S
M8450	M8459S	M8459Se	M8460S	M8460Se	M8480S
M8485S	M8485Se	M8490S	M8490Se	XL400	XL410
CL408e RFID	*CL412e RFID*	*M8485Se RFID*			

Refer to the RFID Devices and Tag Types section for information on tag types supported by the Sato RFID printers.

Printer Status

If the printer reports that everything is OK, the level of firmware in the printer is displayed. This function can be a very valuable tool. If there is a problem communicating with the printer, a corresponding error message is displayed.

Interface Cables (Parallel, Serial and USB)

These printers usually have a serial interface. A parallel interface is available as an option. Generally, newer models support USB, but this may or may not be standard.

Parallel Interface (optional interface) - Using a standard parallel cable, plug the hardware license key into an LPT parallel port, and connect the cable between the key and the printer.

Serial Interface (standard interface) - For all Sato printers, use an RS232-C null modem cable. The hardware license key is not part of the serial interface since it must always be plugged into an LPT parallel port.

USB Interface (standard or optional interface) - Use a standard USB cable between the printer and PC (or server), and plug in either a USB or Parallel hardware license key to one of the other ports on the computer.

Note: *Make sure that the printer is powered* ***off*** *any time you plug in or remove a parallel cable from a Sato printer. This prevents Parallel ports from malfunctioning.*

Sato Options

Sato Options may be label-specific or printer-specific. Label Specific Options (LSOs) can be accessed when you click on the Label Options button from the Label Setup and Properties dialog (F5). Printer Specific Options (PSOs) can be accessed by clicking on the Options button while configuring the printer or by selecting the printer from the Device Configuration grid and clicking on the Options button.

Sato Label Specific Options

Label Options Section

Print Speed — The range of available print speeds varies with the selected printer type.

Print Darkness — Allows you to control the darkness of the print. 1 is the nominal setting.

Label Cut Options Section

Cut Option

- Use Printer Cut Options
- Use label Cut Options

Cut Interval — This determines how frequently labels are cut.

Sato Printer Specific Options

Settings are in dots. Use the dots per inch (dpi) for your printer to find the proper value. For example, if your printer has 203 dpi and you want to set a skip distance of 1 inch, specify a value of 203 for the skip distance.

Label Options Section

Stock Type

- *Continuous* - No gaps or separations between labels.
- *Die Cut* - Gap or separation between each label.
- *Mark Stock* - Black line or mark on the label stock backing.
- *Tag Stock* - Notch in corner of stock.

Character Set — Several printer languages are available to print international characters that are not available in the U.S. character set. See the appendix section of your printer guide to find the corresponding hex codes used to select the desired character.

Print Length

- *7 Inches* sets the printer to the standard print length.
- *14 Inches* sets the printer to the expanded print length (not available for some models).

Expanded Memory — Expanded memory requires the use of a PCMCIA card. Using a PCMCIA card does not add on to existing memory, it replaces it. You must also select the Memory Slot in which the card is located. The length of the label that can be printed varies by printer and resolution. Consult a Sato Technical Reference Manual (not available for some models).

Note: *The M-84XX printers have two choices for maximum label length: 7" (187mm) or 14" (356mm). When using the 8450 printer at 300 dpi, the printer has a maximum print length of 7" and it ignores this setting.*

Memory Slot — Selects the Memory Card slot.

- *None* - No memory card is installed.
- *Slot A* - Memory card is installed in location A or 1 in the printer.
- *Slot B* - Memory card is installed in location B or 2 in the printer.

Note: *Some printers refer to slot 1 instead of A; A = 1 and B = 2.*

Cutter Options Section

Print/Cut Offset — This is useful for aligning labels to the cut position.

Cut Interval — This determines how frequently labels are cut. A cut interval of 2 cuts every two labels; a cut interval of 1 cuts every label, etc.

Base Reference Point Section

The base reference point is the Horizontal and Vertical setting on the label where fields (lines, text, bar codes and graphics) may start printing.

Horizontal — Specifies a field's location in the X direction from the current base reference point measured in number of dots at 0 degree orientation.

Vertical — Specifies a field's location in the Y direction from the current base reference point measured in number of dots at 0 degree orientation.

Applicator Options Section

Opposite Hand Printer — Sato manufactures two applicator engines, a Standard Hand Model and an Opposite Hand Model, identified by looking on the identification tag of the printer or by looking directly at the front of the printer. If the label stock width is less than the print head width and the stock is right justified, this is a Standard Hand Model. An Opposite Hand Model is oriented at lower left as are many of the Sato tabletop printers.

Custom Command Section

Allows commands not available in LLM to be sent to the printer.

Note: *Start, End, and Escape commands (STX, ETX, and ESC) are not required at the start and end of the commands. Example: For a base reference point of 10 Horizontal and 10 Vertical, you would only enter the following command:*

A3H010V001

Note: *Press the* ***Send To Printer*** *button to issue command to the printer.*

Custom Firmware — Sato manufactures two applicator engines, a Standard Hand Model and an Opposite Hand Model, identified by looking on the identification tag of the printer or by looking directly at the front of the printer. If the label stock width is less than the print head width and the stock is right justified, this is a Standard Hand Model. An Opposite Hand Model is oriented at lower left as are many of the Sato tabletop printers.

Serial Communications Section

Bi-Com Mode — To enable Printer Status capabilities, this box must be checked and the proper dipswitch must be set on the printer.

Get Printer Status — Establishes if printer is communicating with the software. See File | Devices | Connection button to make sure settings are correct.

Send to Printer — When using Custom Commands, press this button to send them to the printer.

Sato - More Information

Sample of Supported Fonts

The following list represents only a small portion of the fonts available for Sato Printers. Consult Sato's manual or their web site for further information.

*	5x9	Dot Font
*	8x15	Dot Font
*	13x20	Dot Font
*	OCR-A	Dot Font
*	OCR-B	Dot Font
*	18x30	Smooth Dot Font
*	28x52	Smooth Dot Font
*	Vector Font	Vector / Scalable Font

Dot Fonts can be magnified up to 9X horizontally and 9X vertically. The Vector font can be scaled to any size between .05" to 4.88" high.

Printer Capabilities and Limits

Maximum Number of Fields — These printers have no set limit on the number of fields a label may have. However, the size of the entire print job, (excluding image or graphic data), cannot exceed the size of the printer's receive buffer of approximately 8k.

If the printer reports a “receive buffer overflow,” you have to reduce the number of fields on the label. The best way to assure that your label does not exceed the printer's buffer size is to do test printing while you are designing the label. When you test print, variable data fields are printed at their maximum length. If you are able to test print a label, it should to fit in the printer's receive buffer.

If your label becomes too large to print, you must reduce the number of fields on the label.

Model	Min Print Length	Max Print Length
8400 200 dpi	0.25"	14.0"
8400 150 dpi	0.25"	14.0"
8450 300 dpi	0.25"	7.0"
8450 150 dpi	0.25"	14.0"
8450 100 dpi	0.25"	14.0"

Image Fields Size Limitations - Up to ten images or logos can be used on a label. The maximum image sizes that the printer can handle are shown below. The actual size of the images that your printer can handle may be smaller depending on the available memory in the printer.

Model	Maximum Image Size in Pixels
8400 200 dpi	832 x 832
8400 150 dpi	768 x 768
8450 300 dpi	1536 x 1536
8450 150 dpi	768 x 768
8450 100 dpi	512x512

Performance Considerations

Vector Fonts (also called “Scaleable” Fonts) — The LLM supports all of the Proportional Vector fonts available on the SATO M-84XX printers. These fonts can be scaled to any size between .05” to 4.88”. The quality of these fonts is excellent; however, vector fonts must be “imaged” in the printer before the label is printed, and that process can slow down printing times. It is not uncommon for a label with several sizes of vector fonts to encounter a 3 to 15 second delay per label. Obviously, there is a trade off between font quality and print speed. In addition, Proportional Fonts do not center properly, see the Advanced Techniques chapter for information on centering fonts.

Images — When an image is downloaded to the printer, any “white space” surrounding the actual image is also downloaded to the printer. This wastes printer RAM and increases the amount of time required to download the image. Always crop your images as “tightly” as possible.

Sato Error Messages

	Printer Turned Off	Cable Disconnected	No Stock	Print Head Up
LPT	Error message. Does not let you retry, the label does not print.	Error message. Lets you retry, the label does not print.	Error message. Does not let you retry, the label does not print.	Error message. Does not let you retry, the label does not print.
COM	Error message after the printer is turned back on. Lets you retry, the label prints.	Error message after the cable is re-connected. Lets you retry, the label prints.	No error message. Once stock is added, all labels print.	No error message. Once the print head is put down all labels print.
Spooled Locally	No Loftware error message. A Windows error message is displayed. Lets you retry, the label prints.	No Loftware error message. A Windows error message is displayed. Lets you retry, the label prints.	No Loftware error message. A Windows error message is displayed. Lets you retry, the label prints.	No Loftware error message. A Windows error message is displayed. Lets you retry, the label prints.
Spooled to Shared	No Loftware error message. A Windows error message is displayed. Lets you retry, the label prints.	No Loftware error message. A Windows error message is displayed. Lets you retry, the label prints.	No Loftware error message. A Windows error message is displayed. Lets you retry, the label prints.	No Loftware error message. A Windows error message is displayed. Lets you retry, the label prints.
Spooled to PrintServer	No Loftware error message, a Windows error message is displayed. Lets you retry, the label prints.	No Loftware error message, but a Windows error message is displayed. Lets you retry, the label prints.	No Loftware error message, but a Windows error message is displayed. Lets you retry, the label prints.	No Loftware error message, but a Windows error message is displayed. Lets you retry, the label prints.
Direct IP	No error message. All labels print after the printer is turn back on.	No error message. All labels print after the printer is reconnected.	No error message. All labels print after the printer is re-stocked.	No error message. All labels print after the print head is put down.

TEC Information

This section provides information specific to the TEC family of printers. Newly-supported printers are shown in bold text. RFID Printers (currently supported or in development) are italicized in shaded cells. Supported TEC printers include:

B-SX4	B-SX5	B372	B419	B431	B442
B443	B452	B472	B482	B492	B572
B672	B682	B852	**B858**	B872	B882
B-SX4 RFID	***B-SX5 RFID***				

Updated printer information is available on Loftware's website, www.loftware.com. See Supported Printers on the Technical Support page.

Refer to the RFID Devices and Tag Types section for information on tag types supported by the TEC RFID printers.

Connections

These printers usually have a serial interface. A parallel interface is available as an option. Generally, newer models support USB, but this may or may not be standard.

Parallel Interface (optional interface) - Using a standard parallel cable, plug the hardware license key into an LPT parallel port, and connect the cable between the key and the printer.

Serial Interface (standard interface) - Use the serial cable that came with your printer. If it did not come with a cable, consult the printer documentation for cable requirements.

USB Interface (standard or optional interface) - Use a standard USB cable between the printer and PC (or server), and plug in either a USB or Parallel hardware license key to one of the other ports on the computer.

Network Port - Optional on some printers

TEC Options

TEC Options may be label-specific or printer-specific. Label Specific Options (LSOs) can be accessed when you click on the Label Options button from the Label Setup and Properties dialog (F5). Printer Specific Options (PSOs) can be accessed by clicking on the Options button while configuring the printer or by selecting the printer from the Device Configuration grid and clicking on the Options button.

TEC Label Specific Options

Label Options Section

Print Speed — The range of available print speeds in inches per second (IPS) varies with the selected printer type.

Note: *The printer may use a slower print speed than you specify in order to maintain print quality.*

Note: *The actual maximum value supported by the printer varies among different models & different print speeds. Consult your printer manual for further information.*

Print Density — Adjusts the print density, on some printers this is known as darkness, or head temperature. The valid range is from 10 to 10. When the value exceeds the range, the printer automatically corrects it to the maximum value.

Tag Rotation

- *Bottom First* – The bottom edge of the label is the leading edge as it is fed out of the printer.
- *Top First*– The top edge of the label is the leading edge as it is fed out of the printer.
- *Bottom First Mirrored* – The bottom edge of the label is the leading edge as it is fed out of the printer, the entire label is printed as a mirror image.
- *Top First Mirrored* – The top edge of the label is the leading edge as it is fed out of the printer, the entire label is printed as a mirror image.

Label Overrides Section

Media Options, Issue Settings, Backfeed Settings, and Fine Position Adjustments each have label overrides. This means that the Label Options settings are used instead of the Printer Options.

Media Options Section

Gap Length — When die cut stock is used, this specifies the size (in .1mm) of the gap between each label.

Override Printer Setup — If this is checked, the Gap Length value is used; otherwise, the Printer Options setting is used.

Issue Settings Section

Issue Mode

- *Batch Mode* - Normal printing mode; labels are continuously printed and fed out of the printer.
- *Strip Mode* - While in strip mode, the printer presents each label and waits for it to be removed before continuing. The printer does not print labels if there is a label at the strip sensor.
- *Use Printer Setup* – Use the setting from the Printer Options dialog box.
- *Applicator Mode* – Similar to strip mode except that the printing of each subsequent label is controlled by a pause signal from an expansion I/O device (typically an applicator) rather than the strip sensor.

Cutter — Batch Mode must be selected and the optional cutter is required.

- *After Every Job* – Cutting occurs after all labels from each print request are done printing.
- *After Every Label* – Cutting occurs after every label that prints.
- *Disabled* – No cutting occurs
- *Use Cut Interval* – Uses the value that is selected in the Cut Interval.

Note: *When using the LPS, note that each occurrence of a* ****PrintLabel command*** *constitutes a print request.*

Cut Interval — Designates the number of pieces to be printed before the label is cut. The range is 000 to 100 (no cutting occurs when set at 000)

This setting may yield unexpected results if you use a value that is not an even multiple of the Quantity and/or Duplicates value. For example: If Quantity = 2, Duplicates = 3, and CutInterval = 2, your labels may print/cut in the following sequence:

```
Label 1 Duplicate 1
Label 1 Duplicate 2
<CUT>
Label 1 Duplicate 3
<CUT>
Label 2 Duplicate 1
Label 2 Duplicate 2
<CUT>
Label 2 Duplicate 3
<CUT>
```

Backfeed Settings Section

Backfeed

- *Don't Send Backfeed* – No backfeed commands are sent to the printer.
- *Send Backfeed* **-** Before printing the first label in a print request the printer backfeeds the specified distance (in .1mm) and after printing the last label it forward feeds the same distance. Use this setting to present the label for manual tear off after printing. This setting is not used when printing multi-up layouts.
- *Use Printer Setup* - Use the setting from the Printer Options dialog box.
- *Distance* **-** All measurements are in tenths of a millimeter.

Note: *When using the LPS, note that each occurrence of a *PrintLabel command constitutes a print request.*

Fine Position Adjustments Section

Don't Send Settings	No Fine Position Adjust commands are sent to the printer.
Send Settings	Use this setting for making fine adjustments(in .1mm increments) in the Feed Distance, Cutting or Stripping Position, or Backfeed Distance. Consult your printer manual for further information on setting these values
Use Printer Setup	Use the setting from the Printer Options dialog box.
Feed	Range is set between –500 to +500 mm.
Cut/Strip	Range is between from –500 to +500 mm.
Backfeed	Range is between from –99 to +99 mm.

Graphics Method Section

Use Printer Setup	This is the default setting and applies the setting selected in the Printer Setup dialog.

Graphic data is drawn as shown in the images below:

Overwrite Drawing example

OR Drawing example

Custom Command Section

Command	You may enter a custom TPCL command string here. You must include the command prefix and terminators ("{" and "|}").

This command is sent when printing a label and when clicking on the **Send To Printer** button. It is sent immediately prior to the **buffer clear** command.

RFID Option Section

Override Printer Setup — When checked, the *Tag Position* setting on this dialog will be used, overriding the selection made from the Printer Specific Options dialog.

Tag Position — This sets the feed amount to adjust the RFID tag position before data is written to it. Tag Position can be adjusted in units of 0.1 mm. Feed direction:
+ : forward
- : backward

TEC Printer Specific Options

Media Options Section

Stock Type

- *Continuous Stock* - Continuous media with no black stripe and no gap.
- *Die Cut Stock* - The label-to-label gap is automatically sensed by the transmissive sensor and the paper position is finely adjusted for every piece.
- *Mark Stock* – The black mark provided on the back side of the stock is automatically sensed by the reflective sensor and the paper position is finely adjusted for every piece. (See the Threshold Set command for more information.)
- *Mark Stock on Print Side* - The black mark provided on the print side of the stock is automatically sensed by the upper reflective sensor and the paper position is finely adjusted for every piece.
- *Preprinted Die Cut Stock* - The label-to-label gap is automatically sensed by the transmissive sensor and the paper position is finely adjusted for every piece according to the value set by the threshold setting (Consult your printer manual for further information on setting the threshold).
- *Punched Hole Stock* - The marginal punched holes (round holes) on the fanfold paper are automatically sensed by the lower reflective sensor. Several round holes are automatically sensed according to the specified length of label, and the paper position is finely adjusted for every piece.

Media Type

- *Direct Thermal* - Direct Thermal type of printing (no ribbon), requires special heat sensitive media.
- *Thermal Transfer* - Thermal Transfer type of printing (ribbon installed).

Gap Length — When die cut stock is used, this is the size (in .1mm) of the gap between each label.

Threshold Set — When Mark Stock is used, the black mark provided on the back of the stock is automatically sensed by the reflective sensor and the paper position is finely adjusted for every piece, according to the value set by the threshold setting. (Consult your printer manual for further information on setting the threshold.)

Ribbon Saver — When checked, if there is a non-print area (in the feed direction) of 20 mm or more in the batch mode, cut mode, or strip mode, ribbon saving is performed automatically.

Note: *On some printers the required non-print area is different; consult your printer manual for further information.*

Issue Settings Section

Issue Mode

- *Batch Mode* - Normal printing mode; labels are continuously printed and fed out of the printer.
- *Strip Mode* - While in strip mode, the printer presents each label and waits for it to be removed before continuing. The printer does not print labels if there is a label at the strip sensor.
- *Applicator Mode* – Similar to Strip Mode except that the printing of each subsequent label is controlled by a pause signal from an expansion I/O device (typically an applicator) rather than the strip sensor.

Cutter — Batch Mode must be selected and the optional cutter is required.

- *After Every Job* – Cutting occurs after all labels from each print request are done printing.
- *After Every Label* – Cutting occurs after every label that prints.
- *Disabled* – No cutting occurs.
- *Use Cut Interval* – Uses the value that is selected in the Cut Interval.

Note: *When using the LPS, note that each occurrence of a* ****PrintLabel command*** *constitutes a print request.*

Cut Interval — This designates the number of pieces to be printed before the label is cut.

The range is 000 to 100 (no cutting occurs when set at 000).

This setting may yield unexpected results if you use a value that is not an even multiple of the Quantity and/or Duplicates value. For example: If Quantity = 2, Duplicates = 3, and CutInterval = 2, your labels may print/cut in the following sequence:

```
Label 1 Duplicate 1
Label 1 Duplicate 2
<CUT>
Label 1 Duplicate 3
<CUT>
Label 2 Duplicate 1
Label 2 Duplicate 2
<CUT>
Label 2 Duplicate 3
<CUT>
```

Backfeed — When this check box is enabled, printer backfeeds the stock prior to the printing of the next label a specified distance from 30 to 2000 dpi.

Note: *When using the LPS, note that each occurrence of a *PrintLabel command constitutes a print request.*

All measurements are in tenths of a millimeter.

Fine Position Adjustments Section

Enable	When checked, the adjustments listed below become active, and can be set.
Feed	Range is set between –500 to +500 mm.
Cut/Strip	Range is between from –500 to +500 mm.
Backfeed	Range is between from –99 to +99 mm.

Graphics Method Section

OR Drawing

Overwrite Drawing	This is the default PSO setting. Graphic data is drawn, overwriting data in the image buffer.

Custom Command Section

Command	You may enter a custom TPCL command string here. You must include the command prefix and terminators ("{" and "|}").

This command is sent when printing a label and when clicking on the **Send To Printer** button. It is sent immediately prior to the **buffer clear** command.

RFID Option Section

Tag Position	This sets the feed amount to adjust the RFID tag position before data is written to it. Tag Position can be adjusted in units of 0.1 mm. Feed direction: **+** : forward **-** : backward

Supported Features and Limitations

TEC Incrementing/Decrementing Fields - When the printer is capable of doing the incrementing/decrementing internally, it is instructed to do so. This is called "Native Mode." When printing in Native Mode, control returns to the PC almost immediately.

Loftware Label Manager does incrementing/decrementing in software when the printer cannot do it internally and sends down a different set of data for each label. This is called "Extended Mode."

In Extended mode, the Printing dialog box shows the line "Printing Label x of y" and control does not return to the PC until the entire series of labels is printed.

Number of variable fields - There are limits to the number of variable Outline Font, Bitmapped Font and Bar code fields that be printed on a single label. They are as follows:

Variable Outline Font fields = 99
Variable Bitmapped Font fields = 199
Variable Bar code fields = 31

Image Support - Images are downloaded and stored in the printer's image memory. Loftware Label Manager "remembers" images that are sent to the printer and only resends an image if the image is changed.

Codabar and other Bar Code Symbologies

Loftware has created bar code remaps that are built in to our supported TEC Printers. These are implemented through the use of reserved field names. Here is how it works. Add a bar code to a label designed for a TEC Printer. Look at the table below, and in the Properties Box, choose a symbology from the left column, then start the field name of the bar code with one of the reserved remap names in the right-hand column.

Properties Box Symbol	Reserved Remap Name
Code93	CODABAR
Datamatrix	QRCODE
PostNet	ROYALMAIL
PostNet	KIX

Start/Stop Codes - The default Start/Stop Codes for Codabar are "A" and "D." To change the default Start/Stop Code, from Design Mode, choose **Options | Preferences**, click on the + symbol beside the TEC folder, and follow the instructions to the right to customize the Start/Stop Codes.

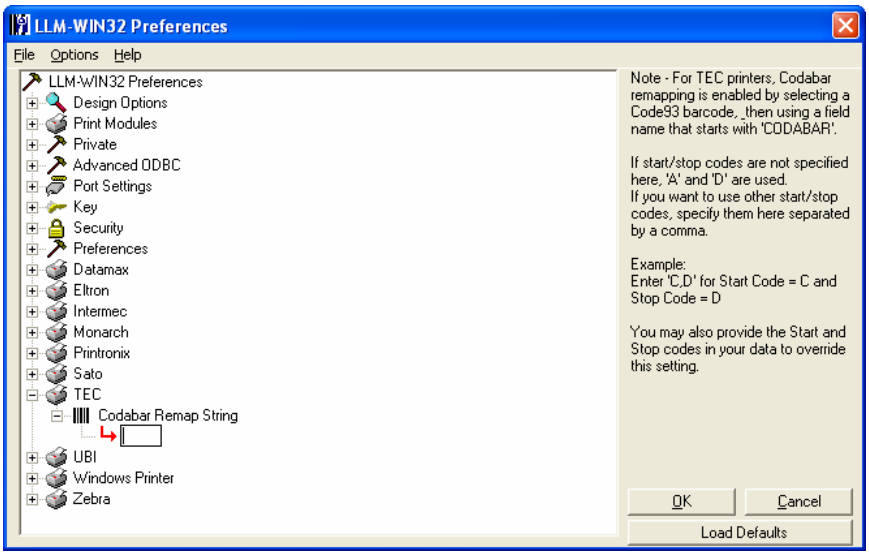


Figure B-C: TEC Codabar Remap String

TEC Error Information

Paper Jam (on LCD screen) - There is a problem with the media. The problem must be corrected, then turn the printer off & back on.

Time Out - If Loftware times out in the middle of sending a large amount of graphic information (images, true type fonts, etc.), the printer may be left in a state where it cannot accept any further commands. If this occurs, you *must* turn the printer off and back on. Try increasing the **timeout value** for the printer in the Advanced Settings Section of the Configuring Printer Connection dialog box.

Printer Commands displayed on LCD screen - If the printer receives commands that are not formatted in a way that it understands, it displays a portion of the command string on the LCD screen. It may look something like the following:

{PC001:0120,0680,

Contact Loftware technical support, and please have the following information ready:

Loftware version number
Printer Model and program version number
A specific example or a description of a way to reproduce the error

UBI Information

This section provides information specific to the UBI family of printers.

301	501E	601E

Updated printer information is available at Loftware's website, www.loftware.com. See Supported Printers on the Technical Support page.

Printer Status (Serial only)

If the status report is positive, the level of firmware in the printer is also displayed. This function can be a very valuable tool. If there is a status problem, a corresponding error message is displayed.

Interface Cables (Parallel, Serial and USB)

These printers usually have a serial interface. A parallel interface is available as an option. Generally, newer models support USB, but this may or may not be standard.

Parallel Interface (optional interface) - Using a standard parallel cable, plug the hardware license key into an LPT parallel port, and connect the cable between the key and the printer.

Serial Interface (standard interface) - Use the serial cable that came with your printer. If it did not come with a cable, consult the printer documentation for cable requirements.

USB Interface (standard or optional interface) - Use a standard USB cable between the printer and PC (or server), and plug in either a USB or Parallel hardware license key to one of the other ports on the PC.

Supported Features

Image Support - Images are downloaded and stored in the printer's image memory. Loftware Label Manager "remembers" images that are sent to the printer and only resends an image if the image is changed.

Supported Fonts - Most UBI printers come standard with scaleable fonts. Consult your printer manual for available fonts. TrueType fonts are downloaded to the UBI printers as graphics.

UBI Options

UBI Options may be label-specific or printer-specific. Label Specific Options (LSOs) can be accessed when you click on the Label Options button from the Label Setup and Properties dialog (F5). Printer Specific Options (PSOs) can be accessed by clicking on the Options button while configuring the printer or by selecting the printer from the Device Configuration grid and clicking on the Options button. This section also describes options for the Intermec RFID FP printer.

Note: *The Intermec PM4i RFID (FP) Printer is created with UBI printer language. Refer to the Intermec RFID FP sections below for Intermec RFID FP settings.*

UBI Label Specific Options

Format — This allows you to choose a unique format number for storage in the printer's memory. This setting is provided for users who wish to "pre load" label formats to the printer. Read the Owner's Manual as all files in the printer may be permanently erased by using this instruction.

Performance — The performance range varies with the selected printer type. In this case, the choices are Normal, High, or Ultra High.

Label Options Section

Cut Option — Choose Printer Cut Options (as set in PSOs, which is the default setting) or the Label Cut Options which may be chosen along with the following setting.

Feed Length — Zero is the default, but the Cut Interval may be set to cut after any number of labels.

Advanced Options Section

Character Set — Allows you to choose from a list of Character Sets or use the Character Set from the PSOs.

Intermec RFID FP Options Section

Use Label or Printer Options — This allows you to use either your Label Specific Options or the options as set in Printer Specific Options (PSOs).

Write Protect RFID Data — When checked, this protects the RFID data written to the tag from being overwritten.

Intermec RFID FP RFID Setup Options Section

Send Setup Options to Printer	When checked, selected settings will be used.
Void Text	This is the text that will be printed across the label after write retries fail.
Label Retries per Label	This sets the number of attempts to write to the label after an unsuccessful try.
Number of Write Retries per Label	This sets the number of attempts to write to the label after an unsuccessful try. Settings range from 0 to 10.
Tag Adjust	The position of the label will, if necessary, be adjusted before trying to write data to the tag.

UBI Printer Specific Options

Forms Control Section

Start Adjust	This can be a negative or a positive number of dots. A positive Start Adjust value will feed out the specified length of media before the printing starts. A negative value will pull back the specified length of media before the printing starts.
Stop Adjust	This can be a negative or a positive number of dots. A positive Stop Adjust value will increase the normal media feed by the specified value after printing is finished. A negative value will decrease the normal media feed by the specified value after printing is finished.

Refer to your printer guide for recommended feed adjustment settings.

X-Start	This specifies the start of the printable area.
Label Taken Sensor	This detects if the printed label has been removed before the next one is printed.
Disable Print Key	This disables the <Print> key requiring the key to be pressed to print a label.
Ribbon Saver	This turns the ribbon saver "auto economy" feature on in supported printers.
EasySet System	This uses the optional EasySet bar code wand or scanner.

Cutter Options Section

Feed Length	Zero is the default, but the this may be set to cut after any number of labels.
Enable Cutter	Enables an optional label cutter. When enabled, the cutter is set to cut a label after printing.

Media Settings Section

Contrast This controls the darkness of the print.

Media Options Section

Media Type

- *Fixed Length Strip* – This is used for continuous stock. The length of the media that will be fed out depends on the length of the print window.
- *Label With Gaps* – This is used for adhesive labels mounted on liner.
- *Ticket With Gaps* – This is used for tickets and tags with detection slits.
- *Ticket With Marks* – This is used for labels, tickets, or continuous stock provided with black marks at the back.
- *Variable Length Strip*- This is used for continuous stock. The length of each copy depends on the size of the print images.

Paper Type

- *Thermal Transfer* - Uses ribbon and non-heat sensitive label stock to print. The print head is activated as the label moves underneath heating the ribbon material and melting it onto the label. To increase the quality of the print decrease/increase the speed and increase/decrease the heat as necessary.
- *Direct Thermal* - Uses heat sensitive label stock without the ribbon. The print head is activated as the label moves underneath heating the label stock and activating the heat sensitive material in the stock causing darkening of the material. To increase the quality of the print decrease/increase the speed and increase / decrease the heat as necessary.

Media Sensitivity Guide Section

The sensitivity for a particular type of media and ribbon is critical to achieving high quality printing. If the **Media Type** you are using is listed, select it, and then press "Apply" to achieve the recommended sensitivity setting. The corresponding settings in the Media Settings section will be refreshed.

Advanced Options Section

Memory Module If a memory card is attached to the printer, you can select it.

Character Set Several printer languages are available that can print international characters that are not available in the U.S. character set. If your printer supports it, select a different Character Set.

Ext Font Location Specify the source of additional fonts.

Custom Command Section

Custom Command Specify printer commands otherwise not available in the Loftware Label Manager dialog boxes. Click on the **Send Options** box to send the commands during printing.

UBI Error Messages

	Printer Turned Off	Cable Disconnected	No Stock	Print Head Up
LPT	Error message, no retry; the label is not printed.	Error message, no retry; the label is not printed.	Error message, no retry; the label is not printed.	Error message, no retry; no label is printed.
COM Port	No error message. LLM-WIN behaves as if the labels have printed. Printer turned back on= no labels	No error message. When reconnected, all the labels print.	No error message. When you re-stock, all labels print.	No error message. When you put the print head down, all labels print.
USB	Received 'port not found' error. USB port not shown in Port combo of Printer |Connection	Error Message. Printing starts when cable reconnected.	Error Message. Printing resumes when stock added.	Error Message. Inconsistent results with printing when head is put back down.
Spooled Locally	No Loftware error message, displays Windows error message. Lets you retry; labels print.	No Loftware error message, displays Windows error message. Lets you retry; labels print.	No Loftware error message, displays Windows error message. Lets you retry; labels print.	No Loftware error message, displays Windows error message. Lets you retry; labels print.
Spooled to Shared	No Loftware error message, but displays Windows error message. Does let you retry, the labels print.	No Loftware error message, but displays Windows error message. Does let you retry, the labels print.	No Loftware error message, but displays Windows error message. Does let you retry, the labels print.	No Loftware error message, but displays Windows error message. Does let you retry, the labels print.
Spooled to PrintServer	No Loftware error message, but displays Windows error message. Does let you retry, the labels print.	No Loftware error message, but displays Windows error message. Does let you retry, the labels print.	No Loftware error message, but displays Windows error message. Does let you retry, the labels print.	No Loftware error message, but displays Windows error message. Does let you retry, the labels print.
Direct IP	No error message. All labels print after the printer is turn back on.	No error message. All labels print after the printer is reconnected.	No error message. All labels print after the printer is re-stocked.	No error message. All labels print after the print head is put down.

Zebra Information

This printer guide provides information specific to the ZEBRA family of printers. Recently added printers are listed in bold print, RFID Printers (currently supported or in development) are italicized. Loftware-supported Zebra printers include:

105	105S	105SE	105SL
110PAX3	110PAX4	110xiIII Plus	130
140	140xi	140xiII	140xiIII
140xiIII Plus	160S	170PAX3	170PAX4
170xi	170xiII	170xiIII	170xiIII Plus
17XPAX	17XPAX2	220	220xi
220xiII	220xiIII	220xiIII Plus	221
2443 Orion	2684	2722	2742
2746	2746e	2824	2844-Z TLP/LP
3742	3842	3844-Z TLP/LP	90A
90xi	90xiII	90xiII 600dpi	90xiIII
90xiIII Plus	91	95	96xiIII
96xiIII Plus	A300	DA402	HT-146
Px400	QL320	QL420	R110PAX3
R110PAX4	R110XiIIIPlus	R110Xi	R140
R170Xi	R2844-Z	R402	R4M Plus
RW420	**S4M (ZPL)**	Stripe 300	Stripe 400
Stripe 500	Stripe 600	T300	TA402
Z4000	Z4M	Z4M Plus	Z6000
Z6M	Z6M Plus	***R110 PAX3 RFID***	***R110 PAX4 RFID***
R110XiIIIPlus RFID	***R110Xi RFID***	***R140 RFID (HF)***	***R170Xi RFID***
R402 RFID (HF)	*R4M Plus RFID*	*R2844-Z RFID (HF)*	

Zebra has added some former Eltron Printers to the Zebra lineup, and these are also supported by Loftware. They include:

2443 Orion	2684 Strata	2722	2742	2746
2746e	TLP 2824	2844	3742	3842

Information and options on these printers may be found in the Eltron Section of this appendix. Updated printer information is available at Loftware's website, www.loftware.com. See Supported Printers on the Technical Support page.

Refer to the RFID Devices and Tag Types section for information on tag types supported by the Zebra RFID printers.

Interface Cables (Parallel, Serial and USB)

These printers usually have a serial interface. A parallel interface is available as an option. Generally, newer models support USB, but this may or may not be standard.

Parallel Interface (optional interface) - Using a standard parallel cable, plug the hardware license key into an LPT parallel port, and connect the cable between the key and the printer.

Serial Interface (standard interface) - Use the serial cable that came with your printer. If it did not come with a cable, consult the printer documentation for cable requirements.

USB Interface (standard or optional interface) - Use a standard USB cable between the printer and PC (or server), and plug in either a USB or Parallel hardware license key to one of the other ports on the PC.

Supported Features

Image Support - Images are downloaded and stored in the printer's image memory. Loftware Label Manager "remembers" images that are sent to the printer and only resends an image if the image is changed.

Supported Fonts - Most Zebra printers come standard with 8 bitmapped fonts, and 1 scaleable font. Additional downloadable fonts are also available. Consult your printer manual for available fonts. TrueType fonts are downloaded to the Zebra printers as graphics.

Zebra Options

Zebra Options may be label-specific or printer-specific. Label Specific Options (LSOs) can be accessed when you click on the Label Options button from the Label Setup and Properties dialog (F5). Printer Specific Options (PSOs) can be accessed by clicking on the Options button while configuring the printer or by selecting the printer from the Device Configuration grid and clicking on the Options button. (Zebra RFID options are described in the next section.)

Zebra Label Specific Options

These settings are accessed when you click on the Label Options button from the Label Setup and Properties dialog. Printer options set when you click on the Options button from the Printer Configurations dialog are described below.

Label Options Section

Print Speed	This option allows the user to vary the speed at which the label prints. The range of available print speeds varies with the selected printer type.
Darkness	Darkness allows you to control the darkness of the print. 0 is the nominal setting.
Label Top	This command moves the entire label format up or down from its current

position. Inputting a negative value moves the format toward the top of the label. Inputting a positive number moves the format away from the top of the label.

Flip Label 180 Degrees — This command prints a label that has been inverted 180 degrees.

Print Mirror Image of Label — This command instructs the printer to print the entire label as a mirror image. The image is flipped from left to right.

Print Label as White on Black — This instruction reverses the printing of all fields on the label format. The fields are printed as white on a black background.

Character Options Section

Character Set — Default is set to using the Character Set specified in Printer Options (PSOs) but the list displays other Character Sets that may be chosen.

Double Byte Character Set — Default is set to using the Character Set specified in Printer Options (PSOs) but the list displays other Double Byte Character Sets that may be chosen.

Custom ZPL Section

ZPL Command — The ZPL command option sends printer commands otherwise not available in the Loftware Label Manager dialog boxes.

Send Command — This command instructs Loftware Label Manager when to send a ZPL command.

Label Cut Options Section

Cut Option — Choose Printer Cut Options (as set in PSOs which is the default setting)

Cut Interval — Zero is the default but the Cut Interval may be set to cut after any number of labels

True Type Fonts Section

See the following section titled "Zebra TrueType Font Download and Use Instructions."

Zebra Printer Specific Options

These settings are accessed when you click on the Options button from the Printer Configurations dialog. Options set when you click on the Label Options button from the Label Setup and Properties dialog are described above.

Printer Options Section

PrintMode — The Print Mode instruction determines the action the printer takes after a label or group of labels has been printed. There are five different modes of operation:

- *Cutter* - The web separating the printed label and the next blank label to be printed is extended into the cutter mechanism. The label is cut; the blank label is then retracted into the printer so that it can be printed.
- *Peel Off* – After printing, the label is partially separated from the backing. Printing stops until the label is completely removed. Peel off handling requires that the stock in the printer be properly fed through the peel off attachment on the printer. Select only if printer is equipped with an internal rewind spindle.
- *Rewind* - Label and backing are rewound on an optional internal rewind device. The next label is positioned under the printhead.
- *Tear Off* - After printing, the label is advanced so that the web is over the tear bar. Label, with backing attached, can then be torn off manually.
- *Applicator* – After printing, the label may be mechanically removed and applied to an object.

Media

- *Thermal Transfer* (Ribbon) - Uses ribbon and non-heat sensitive label stock to print. The print head is activated as the label moves underneath heating the ribbon material and melting it onto the label. To increase the quality of the print decrease/increase the speed and increase/decrease the heat as necessary.
- *Direct Thermal* (No Ribbon) - Uses heat sensitive label stock without the ribbon. The print head is activated as the label moves underneath heating the label stock and activating the heat sensitive material in the stock causing darkening of the material. To increase the quality of the print, decrease/increase the speed and increase/decrease the heat as necessary.

Backfeed

The default is the default for the selected Print Mode. Other options include:

- *After Print* - causes the printer to backfeed (retract) between each label that is printed.
- *Before Print* - causes the printer to backfeed (retract) before each label that is printed.
- *Suppress* - causes the printer to suppress the backfeeding or retracting action before print and after print.
- *Suppress Except Last Label* - causes the printer to suppress the backfeeding or retracting action before print and after print, except before or after the last label has printed.

Stock Type

- *Continuous* - No gaps or separations between labels.
- *Non-Continuous* – Gap, perforation or separation between each label.
- *Mark Stock* - Black line or mark on the label stock backing.
- *Web* – Perforation, gap, or separation between each label.

Download Graphics To

- *DRAM* – The default location for graphic storage is the printer's internal memory. This is volatile memory; if the printer is powered off, the graphics are lost.
- *EEPROM* - This is a battery-backup type memory. If the printer is powered off, the graphics remain in memory.

- *PCMCIA* - This is a memory card which can be removed from the printer.

Cut Interval	Number of printed labels between cutting. If the cutter is enabled, and the cut interval is set to 0 (zero), then the printer cuts the label after the batch.
Tear Off	Adjusts the rest point of the media after a label is printed, which changes the position at which the label can be torn off or cut. By default, the Tear Off settings are sent to the printer. If you do not want any Tear-Off settings sent to the printer, this may be disabled in Preferences. In LLM Design Mode: Options > Preferences > Zebra.
Always Download Format	Instructs the Loftware Label Manager system to send the label format with every print request.
Override Pause Count	This overrides the *Paused Count* setting, which is controlled by the *Cut Interval* selection.
Enable Zebra Network	This setting enables the printer to connect with the Zebra Network.
Ignore Printer Status	When this option is enabled, data is sent directly to the printer without statusing. In this mode, the Loftware Label Manager system does not get messages back from the printer in the event an error occurs.
Use ZPL II	This function enables the use of ZPL II commands. See the ZPL II manual for information on commands.
Only Resend Fields That Have Changed	When checked, only the data that has been changed is re-sent for printing.
Send Options [Label/Printer]	Checked by default, which sends all label and printer options. When unchecked, only the Map Clear command is sent.

Font Options Section

Character Set	Several printer languages are available to print international characters that are not available in the U.S. character set. See the appendix section of your printer guide to find the corresponding hex codes used to select the desired character.

Custom ZPL All Labels Section

ZPL Command	The ZPL command option sends printer commands otherwise not available in the Loftware Label Manager dialog boxes.
Send Command	Send Command instructs the Loftware Label Manager system when to send the ZPL Command.

Zebra RFID Printer Options

The following information applies to Loftware-supported Zebra RFID printers.

Zebra Label Specific RFID Options

Use Label or Printer Options	This allows you to use either your settings in the Label Specific Options or those set in the Printer Specific Options.

Set Up Options Section

Send Setup Options to Printer	When checked, the setup options selected on this dialog are used for printing.
Tag Type	Auto-detect automatically determines the tag type by querying the tag. Select “None” if no tags are available. If the printer supports it, select from: EPC Class 0, EPC Class 0 Plus, EPC Class 1 64-bit, EPC Class 1 96-bit, ISO 18000-06B, EPC Gen2, Philips HF I-Code, Philips HF I-Code ISO 15693, TI HF Tag-it, or TI HF Tag-it ISO 15693. (Note that not all tag types are supported by all printers. Refer to the RFID Devices and Tag Types section.)
Transponder Position From Top of Label	The position in Dot Rows from the top of the label to the RFID Transponder embedded in the label. The default position is 8 Dot Rows from the top of the label. '0' dot rows means that the Transponder is not to be moved from its default position.
Length of Void Printout	This lets you determine how much of the label is printed with a "VOID" warning when the encoding or reading of the RFID tag fails. The default of "0" prints the VOID message the entire length of the label.
Number of Labels to Retry in Case of Read/Encode Failure	This setting allows you to determine how many retries are allowed after a failure while encoding the RFID tag or label. As the cost of RFID smart labels and tags is still fairly high, setting this to a low number may be advisable.

Write Options Section

Number of Times to Retry	This setting determines the number of times to retry writing to the tag in case of initial failure. The default setting is 0.
Feed Label After Writing	When checked, the label is fed from the printer for removal and use after writing.
Enable RFID Motion	By default, labels automatically print at the end of the format. When deselected, the label is not moved when it reaches the program position. Note that this setting must be specified for each label; it is not automatically carried over from one label to the next.
Write Protect	When checked, the data written to the tag is protected, and the tag may not be written to again. This could be used for example, as a pre-emptive step to prevent a label in transit from being altered, thus rendering the original encoding to the tag invalid.

Read Options Section

Number of Times to Retry	This setting determines the number of times to retry writing to the tag in case of initial failure. The default setting is 0.
Enable RFID Motion	By default, labels automatically print at the end of the format. When deselected, the label is not moved when it reaches the program position. Note that this setting must be specified for each label; it is not automatically carried over from one label to the next.
Feed Label After Reading	When checked, the label is fed from the printer for removal and use after reading.

Zebra Printer Specific RFID Options

Set Up Options Section

Send Setup Options to Printer	When checked, settings are used for printing.
Tag Type	This is set to *Auto-Detect*, by default, which automatically determines the tag type by querying the tag. Other choices are *None* (no tags available), *Texas Instruments Tag-it*, and *Philips I-Code*.
Transponder Position From Top of Label	The position in Dot Rows from the top of the label to the RFID transponder embedded in the label. The default position is 8 Dot Rows from the top of the label. '0' dot rows means that the media should not to be moved from its default position. This setting may be particularly important if you are not using Zebra RFID label stock in your printer, as the transponder position may be quite different.
Length of Void Output	This lets you determine how much of the label is printed with a "VOID" warning when the encoding or reading of the RFID tag fails. The default of "0" prints the VOID message the entire length of the label. This may or may not be helpful, as the VOID printing would use up more of the printer's ribbon, but on the other hand, it would make the failure of the tag's encoding or reading more visible and therefore more evident.
Number of Labels to retry in case of read/encode failure	This setting allows you to determine how many retries are allowed after a failure while encoding or reading the RFID tag.

Write Options Section

Number of Times to Retry	This setting determines the number of times to retry writing to the tag in case of initial failure. The default setting is 0.
Enable RFID Motion	By default, labels automatically print at the end of the format. When deselected, the label is not moved when it reaches the program position. Note that this setting must be specified for each label; it is not automatically carried over from one label to the next.
Write Protect	When checked, the data written to the tag is protected, and the tag may not be written to again. This could be used for example, as a pre emptive step to prevent a label in transit from being altered, thus rendering the original encoding to the tag invalid. The default setting is not checked.

Read Options Section

Number of Times to Retry	This setting determines the number of times to retry reading the tag data in case of initial failure. The default setting is 0. This setting only applies if you have set the Human Readable property of the RFID field to "Read Tag." See Chapter 5 for more information.
Enable RFID Motion	By default, labels automatically print at the end of the format. When deselected, the label is not moved when it reaches the program position. Note that this setting must be specified for each label; it is not automatically carried over from one label to the next.

Zebra Printer Capabilities and Limits

Maximum Number of Fields	The maximum number of fields per label format is 200.
Maximum Image Size	The maximum size of any image is 600 dots x 600 dots. The physical size of the image depends on the resolution of your printer. Note that the actual size of images the printer is able to handle is determined by the amount of RAM installed in your printer. If images are displayed in Loftware Label Manager label design but do not print, the printer may not have enough memory to store the image.
Printed Bar code Does Not Match the Design	It is possible to define a combination of attributes, such as line width, ratio, etc., that the printer cannot produce, or might print in one orientation but not another. Under these conditions, the printer may print the "closest possible" bar code. This usually occurs when you define a bar code with line width 1. The printer sometimes "promotes" this to a line width 2 bar code, resulting in a printed bar code that is twice as long as desired.
Disappearing Fields	The Advanced printers do not print any field with an invalid definition. For example, if you define a UPC-A bar code, which requires exactly 11 digits, and then provide alphabetic data at print time, the printer does not print the field. If your label test prints correctly, but fields do not print in production printing, check your data carefully to make sure it is valid.
Using CODE 128	Refer to the section on building Code 128, UCC-128 symbologies.
Zebra Incrementing / Decrementing Fields	When the printer is capable of doing the incrementing/decrementing internally, it is instructed to do so. This is called Native Mode. When printing in Native Mode, control returns to the PC almost immediately. Loftware Label Manager does incrementing/decrementing in software when the printer cannot do it internally and sends down a different set of data for each label. This is called “Extended Mode.” In Extended mode, the Printing dialog box shows the line “Printing Label *x* of *y*” and control does not return to the PC until the entire series of labels is printed.
Set Label Size	The label size is used as a frame of reference. When you rotate your label, or when you rotate the printing of a label, it is imperative that Loftware Label Manager Design knows the exact size of the stock on which you are printing.

Zebra TrueType Font Download and Use Instructions

Some Zebra printers are capable of storing fonts. Zebra provides a utility called ZTools™ that allows TrueType Fonts (TTF) to be downloaded to a memory location. The advantage to this is that you do not have to remap a font and guess at what size it prints on the label.

Note: *Contact Zebra for information regarding your printer's capability of storing fonts and for the latest version of ZTools™ (3.1).* ***Important:*** *Do an* ***Options*** **|** ***Test Print*** *from ZTools™ to verify that the font is successfully downloaded to the printer.*

Part 1 - Font Download Instructions

1. Open the Zebra ZTools (Version 3.1) program.
2. Select **File > Add** from the menu.
3. From the "Select File" dialog, select the font from the left column to be downloaded (.ZST extension).

Note: *The font you select to download must have been converted by ZTools from the PC (TTF extension) to ZTools prior to this selection.*

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4. Click **OK**; the dialog box is no longer displayed.
5. Select **View > Download**.
6. The Zebra Tools Download dialog box is displayed.
7. Press the button with the "**-**" icon (displayed in blue). The icon changes to a checkmark.
8. Press the button with the "Stop Light" icon.

The Stop Light icon becomes gray, and the font starts downloading to the printer.

Part 2 – Loftware Design Instructions

1. Open Loftware Label Manager in Design mode.
2. Open the label in Design, press **F6** and the **Options** button.
3. Check the **Recall TrueType Fonts** box, and then press **OK**.
4. Place a field on the label; change the Font Category property to **TrueType Fonts**.
5. Select the downloaded font from the Font list in the properties box.
6. Print the label.

Points to remember:

- Either *all* TrueType Fonts are sent to the printer as bitmaps, or they are *all* recalled from the printer. It is not possible to mix and match them.
- If the printer is turned off, the font is lost unless it has been downloaded to something other than volatile ram.
- This functionality is only available in Versions 5.5.1.8 and greater of Loftware.
- The printer must have the correct version firmware and must have been created with Zebra Printer Language (ZPL).

Zebra Error Messages

	Printer Turned Off	Cable Disconnected	No Stock	Print Head Up
LPT	Error message. All labels print when the printer is turned back on.	Error message. When the printer is re-connected, all labels print.	Error message. When the stock is added, all labels print.	Error message. When the print head is down, all the labels print.
COM	Not tested.	Not tested.	Not tested.	Not tested.
Spooled Locally	Error message. The labels print once the printer is turned back on.	Error message. The labels print once the printer is reconnected.	Error message. The labels print after stock is added.	Error message. The labels print fine after print head is down.
Spooled to Shared	No error msg. When the printer is turned back on, all labels print.	No error msg. When reconnected all labels print.	No error msg. When stock is added all labels print.	No error msg. When print head is put down all the labels print.
Spooled to PrintServer	No error msg. When the printer is on, all labels print	No error msg. When reconnected, the labels print.	No error msg. When stock is added, all labels print.	No error msg. When head is down, the labels print.
Direct IP	No error msg. When the printer is turned back on all labels print.	No error msg. If reconnected, the labels do not print.	No error msg. When stock is added, all labels print out.	No error msg. When print head is put down, all the labels print.

Tag Configuration

This section outlines relevant block configuration of the RFID tags supported by Loftware RFID devices.

HF RF tagging system uses the 13.56 MHz frequency range. Currently, HF tag types are supported by some Loftware RFID printers. See the next section on RFID Devices and Tag Types.

HF Tag Type	Configurable Data Blocks
Philips HF I-Code	Blocks 5 to 15 can be encoded, each with a block size of 4 bytes. (16 blocks total; blocks 0 to 4, which are not user-accessible, contain the serial number, write-access conditions and configuration bits.) Supports Lock Tag after Writing, Overflow, EAS, and AFI features.
Philips HF I-Code ISO 15693	The higher blocks – 0 to 27 – are used for user data, each with a block size of 4 bytes. RF interface is defined by the ISO 15693 standard. (32 blocks total; the lowest blocks (-4 to -1), which are not user-accessible, contain the unique identifier, write access conditions, and other special data.) Supports Lock Tag after Writing, Overflow, EAS, AFI, and DSFID features.
TI HF Tag-it	User data is contained in blocks 0-7. Each block consists of 4 bytes. Supports Lock Tag after Writing and Overflow features.
TI HF Tag-it ISO 15693	User data is organized into 64 blocks (0 to 63). Each block consists of 4 bytes. RF interface is defined by the ISO 15693 standard. Supports Lock Tag After Writing, Overflow, AFI, and DSFID features.

The following UHF tag types are supported by Loftware. See also the next section on RFID Devices and Tag Types.

UHF Tag Type	User-accessible Data Blocks
UHF 64-bit Class 1	PC block = 1 byte - used to lock the tag EPC block = 8 bytes - used for EPC / DOD
UHF 96-bit Class 1	PC block = 1 byte - used to lock the tag EPC block = 12 bytes used for EPC / DOD encoding
UHF 96-bit Class 0+	KC block = 3 bytes - used to lock the tag EPC block = 12 bytes used for EPC / DOD encoding USR block = 13 bytes - used for user specific data
UHF UCODE EPC 1.19	Block #0 = 12 bytes
UHF ISO 18000-6B	Block #0 = 200 bytes
UHF Class 1 Gen 2	32-bit Access Password 32-bit Kill Password 96-bit EPC

RFID Devices and Tag Types

In order to encode data on RFID labels and tags, an RFID device must support specific RFID commands. Some RFID printers exclusively support encoding to UHF tag types. Others will write only to HF tags. A few printers support both UHF and HF tags.

The tables below list current Loftware RFID printers and the tag types each supports. (RFID Readers are documented in a separate guide.)

RFID UHF Printers

This table shows Loftware RFID Gen 1 and Gen 2 UHF printers for smart labels and the UHF tag types each supports.

	UHF Gen 1					*UHF Gen 2*	
	64-bit Class 1	96-bit Class 1	96-bit Class 0+	UCODE EPC 1.19	ISO 18000-6B	Impinj Monza	TI Dallas
Avery 6404 RFID	X	X		X			X
Avery 6405 RFID	X	X		X			X
Avery 6406 RFID	X	X		X			X
Avery 6408 RFID	X	X		X			X
Avery ALX 924 RFID	X	X		X			X
Avery ALX 925 RFID	X	X		X		X	X
Avery ALX 926 RFID	X	X		X			X
Avery DPM 4 RFID	X	X		X			X
Avery DPM 5 RFID	X	X		X			X
Avery DPM 6 RFID	X	X		X			X
Datamax A-4212 RFID	X	X					
Datamax A-4310 RFID	X	X					

	UHF Gen 1					*UHF Gen 2*	
	64-bit Class 1	**96-bit Class 1**	**96-bit Class 0+**	**UCODE EPC 1.19**	**ISO 18000-6B**	**Impinj Monza**	**TI Dallas**
Datamax A-4408 RFID	X	X					
Datamax A-4606 RFID	X	X					
Datamax A-6212 RFID	X	X					
Datamax A-6310 RFID	X	X					
*Datamax I-4210 RFID**	X	X	X	X		X	X
*Datamax I-4212 RFID**	X	X	X	X		X	X
*Datamax I-4308 RFID**	X	X	X	X		X	X
*Datamax I-4406 RFID**	X	X	X	X		X	X
*Datamax I-4604 RFID**	X	X	X	X		X	X
FOXIV SPLA 7204e RFID	X	X	X	X		X	X
FOXIV SPLA 7304e RFID	X	X	X	X		X	X
IBM Infoprint 6700 5504-R40 (203 dpi) RFID	X	X	X	X		X	X
IBM Infoprint 6700 5504-R40 (300 dpi) RFID	X	X	X	X		X	X
IBM Infoprint 6700 5504-R60 (203 dpi) RFID	X	X	X	X		X	X
IBM Infoprint 6700 5504-R60 (300 dpi) RFID	X	X	X	X		X	X
IBM Infoprint 6700 5504-R80 (203 dpi) RFID	X	X	X	X		X	X
IBM Infoprint 6700 5504-R80 (300 dpi) RFID	X	X	X	X		X	X
Intermec EasyCoder PM4i RFID (FP)	X	X		X	X	X	X
Intermec EasyCoder PM4i RFID (IPL)	X	X		X	X	X	X
Monarch 9855 RFID	X	X					
Monarch 9855 RFMP	X	X	X	X		X	X
Printronix SL5204 RFID	X	X	X	X		X	X
Printronix SL5204r RFID	X	X	X	X		X	X
Printronix SL5304 RFID	X	X	X	X		X	X
Printronix SL5304r RFID	X	X	X	X		X	X
Printronix SL5604r RFID	X	X	X	X		X	X
Printronix SLPA5204r RFID	X	X	X	X		X	X
Printronix SLPA5304r RFID	X	X	X	X		X	X
Printronix SLPA7204e RFID	X	X	X	X		X	X
Printronix SLPA7304e RFID	X	X	X	X		X	X
Printronix T5204 RFID	X	X	X	X		X	X
Printronix T5204r RFID	X	X	X	X		X	X
Printronix T5206r RFID	X	X	X	X		X	X

	UHF Gen 1					*UHF Gen 2*	
	64-bit Class 1	**96-bit Class 1**	**96-bit Class 0+**	**UCODE EPC 1.19**	**ISO 18000-6B**	**Impinj Monza**	**TI Dallas**
Printronix T5208r RFID	X	X	X	X		X	X
Printronix T5304 RFID	X	X	X	X		X	X
Printronix T5304r RFID	X	X	X	X		X	X
Printronix T5306r RFID	X	X	X	X		X	X
Printronix T5308r RFID	X	X	X	X		X	X
*Sato CL408e RFID**	X	X			X		
Sato CL412e RFID	X	X			X		
Sato M8485Se RFID	X	X					
TEC B-SX4 RFID	X	X		X	X	X	X
TEC B-SX5 RFID	X	X		X	X	X	X
Zebra R110 PAX3 RFID	X	X					
Zebra R110 PAX4 RFID	X	X	X		X	X	X
Zebra R110 XiIIIPlus RFID			X				
Zebra R110 Xi RFID	X	X	X		X	X	X
Zebra R170Xi RFID	X	X	X		X	X	X
Zebra R4M Plus RFID	X	X					

Table B-1: Loftware-supported UHF RFID Printers and Tag Types

* The Datamax I-4210 RFID, I-4212 RFID, I-4308 RFID, I-4406 RFID, I-4604 RFID, and the Sato CL408e RFID also support HF encoding. See Table B-3 below.

RFID HF Printers

The table below shows Loftware RFID HF printers for RFID smart labels and the HF tag types that each supports. Note that the Datamax printers on this table also support UHF tags. The Sato printer also supports UHF tags. (These are listed in the tables above and/or below.)

	Philips HF I-Code	**Philips HF I-Code ISO 15693**	**TI HF Tag-it**	**TI HF Tag-it ISO 15693**
*Datamax I-4210 RFID**		X		X
*Datamax I-4212 RFID**		X		X
*Datamax I-4308 RFID**		X		X
*Datamax I-4406 RFID**		X		X
*Datamax I-4604 RFID**		X		X
*Sato CL408e**	X	X	X	X
Zebra R140 RFID	X		X	
Zebra R2844-Z RFID	X	X	X	X
Zebra R402 RFID	X	X	X	X

Table B-2: Loftware-supported HF RFID Printers and Tag Types

* The Datamax I-4210 RFID, I-4212 RFID, I-4308 RFID, I-4406 RFID, I-4604 RFID, and the Sato CL408e RFID also support UHF encoding. See Table B-3 below.

RFID HF / UHF Printers

This table shows Loftware RFID printers for smart labels that support both HF and UHF and the tag types each supports.

	UHF Gen 1					***UHF Class 1 Gen 2***		***HF Gen 1***			
	64-bit Class 1	**96-bit Class 1**	**96-bit Class 0+**	**UCODE EPC 1.19**	**ISO 18000-6B**	**Impinj Monza**	**TI Dallas**	**Phillips I-Code**	**Phillips I-Code ISO15693**	**TI Tag-it**	**TI Tag-it ISO 15693**
Datamax I-4210 RFID	X	X	X	X		X	X		X		X
Datamax I-4212 RFID	X	X	X	X		X	X		X		X
Datamax I-4308 RFID	X	X	X	X		X	X		X		X
Datamax I-4406 RFID	X	X	X	X		X	X		X		X
Datamax I-4604 RFID	X	X	X	X		X	X		X		X
Sato CL408e	X	X			X			X	X	X	X

Table B-3: Loftware RFID Printers that support HF and UHF Tag Types

Appendix C Reference Tables

ASCII-Code 39 Reference Table

ASCII – Code39							
ASCII	CODE39	ASCII	CODE39	ASCII	CODE39	ASCII	CODE39
NUL	%U	SP	SPACE	@	%V	a	+A
S0H	$A	!	/A	A	A	b	+B
STX	$B	“	/B	B	B	c	+C
ETX	$C	#	/C	C	C	d	+D
EOT	$D	$	/D	D	D	e	+E
ENQ	$E	%	/E	E	E	f	+F
ACK	$F	&	/F	F	F	g	+G
BEL	$G	’	/G	G	G	h	+H
BS	$H	(	/H	H	H	I	+I
HT	$I	)	/I	I	I	j	+J
LF	$J	*	/J	J	J	k	+K
VT	$K	+	/K	K	K	l	+L
FF	$L	,	/L	L	L	m	+M
CR	$M	-	-	M	M	n	+N
SO	$N	.	.	N	N	o	+O
SI	$O	/	/O	O	O	p	+P
DLE	$P	0	0	P	P	q	+Q
DC1	$Q	1	1	Q	Q	r	+R
DC2	$R	2	2	R	R	s	+S
DC3	$S	3	3	S	S	t	+T
DC4	$T	4	4	T	T	u	+U
NAK	$U	5	5	U	U	v	+V
SYN	$V	6	6	V	V	w	+W
ETB	$W	7	7	W	W	x	+X
CAN	$X	8	8	X	X	y	+Y
EM	$Y	9	9	Y	Y	z	+Z
SUB	$Z	:	/Z	Z	Z	{	%P
ESC	%A	;	%F	[	%K	|	%Q
FS	%B	<	%G	\	%L	}	%R
GS	%C	=	%H	]	%M	~	%S
RS	%D	>	%I	^	%N	DEL	%T,%X,%Y,%Z
US	%E	?	%J	_	%O		

Code 128 Character Sets

Code 128 Character Sets											
Value	Code A	Code B	Code C	**Value**	Code A	Code B	Code C	**Value**	Code A	Code B	Code C
0	SP	SP	00	36	D	D	36	72	BS	h	72
1	!	!	01	37	E	E	37	73	HT	i	73
2	“	“	02	38	F	F	38	74	LF	j	74
3	#	#	03	39	G	G	39	75	VT	k	75
4	$	$	04	40	H	H	40	76	FF	l	76
5	%	%	05	41	I	I	41	77	CR	m	77
6	&	&	06	42	J	J	42	78	SO	n	78
7	‘	‘	07	43	K	K	43	79	SI	o	79
8	(	(	08	44	L	L	44	80	DLE	p	80
9	)	)	09	45	M	M	45	81	DC1	q	81
10	*	*	10	46	N	N	46	82	DC2	r	82
11	+	+	11	47	O	O	47	83	DC3	s	83
12	,	,	12	48	P	P	48	84	DC4	t	84
13	_	_	13	49	Q	Q	49	85	NAK	u	85
14	.	.	14	50	R	R	50	86	SYN	v	86
15	/	/	15	51	T	T	51	87	ETB	w	87
16	0	0	16	52	S	S	52	88	CAN	x	88
17	1	1	17	53	U	U	53	89	EM	y	89
18	2	2	18	54	V	V	54	90	SUB	z	90
19	3	3	19	55	W	W	55	91	ESC	{	91
20	4	4	20	56	X	X	56	92	FS	|	92
21	5	5	21	57	Y	Y	57	93	GS	}	93
22	6	6	22	58	Z	Z	58	94	RS	~	94
23	7	7	23	59	[	[	59	95	US	DEL	95
24	8	8	24	60	\	\	60	96	FNC3	FNC3	96
25	9	9	25	61	]	]	61	97	FNC2	FNC2	97
26	:	:	26	62	^	^	62	98	SHIFT	SHIFT	98
27	;	;	27	63	-	-	63	99	CodeC	CodeC	99
28	<	<	28	64	NUL	.	64	100	CodeB	CodeB	100
29	=	=	29	65	SOH	a	65	101	FNC4	FNC4	101
30	>	>	30	66	STX	b	66	102	FNC1	FNC1	102
31	?	?	31	67	ETX	c	67	103	START	(CodeA)	103
32	@	@	32	68	EOT	d	68	104	START	(CodeB)	104
33	A	A	33	69	ENQ	e	69	105	START	(CodeC)	105
34	B	B	34	70	ACK	f	70				
35	C	C	35	71	BEL	g	71				

Wedge Reader Conversion Chart

DEC	KEYBOARD	ASCII
0	NUM+	NUL
I	NUMLOCK	SOH
2	SCROLL LOCK	STX
3	NUM – [MINUS]	ETX
4	INS	EOT
5	DEL	ENQ
6	SYS REQ	ACK
7	N/A	BEL
8	ALT GR	BS
9	TAB RIGHT	HT
10	CAPS LOCK	LF
11	TAB LEFT	VT
12	ALT	FF
13	CR/ENTER	CR
14	CTRL	SO
15	SHIFT	SI
16	F1	DLE
17	F2	DC1
18	F3	DC2
19	F4	DC3
20	F5	DC4
21	F6	NAK
22	F7	SYN
23	F8	ETB
24	F9	CAN
25	F10	EM
26	HOME	SUB
27	ESC	ESC
28	PAGE UP	FS
29	PAGEDOWN	GS
30	PRINT SCREEN	RS
31	END	US
32	SPACE	SP
123	CURSOR UP	{
124	CURSOR DOWN	|
125	CURSOR LEFT	}
126	CURSOR RIGHT	~
127	DEL	BACKSP-DEL

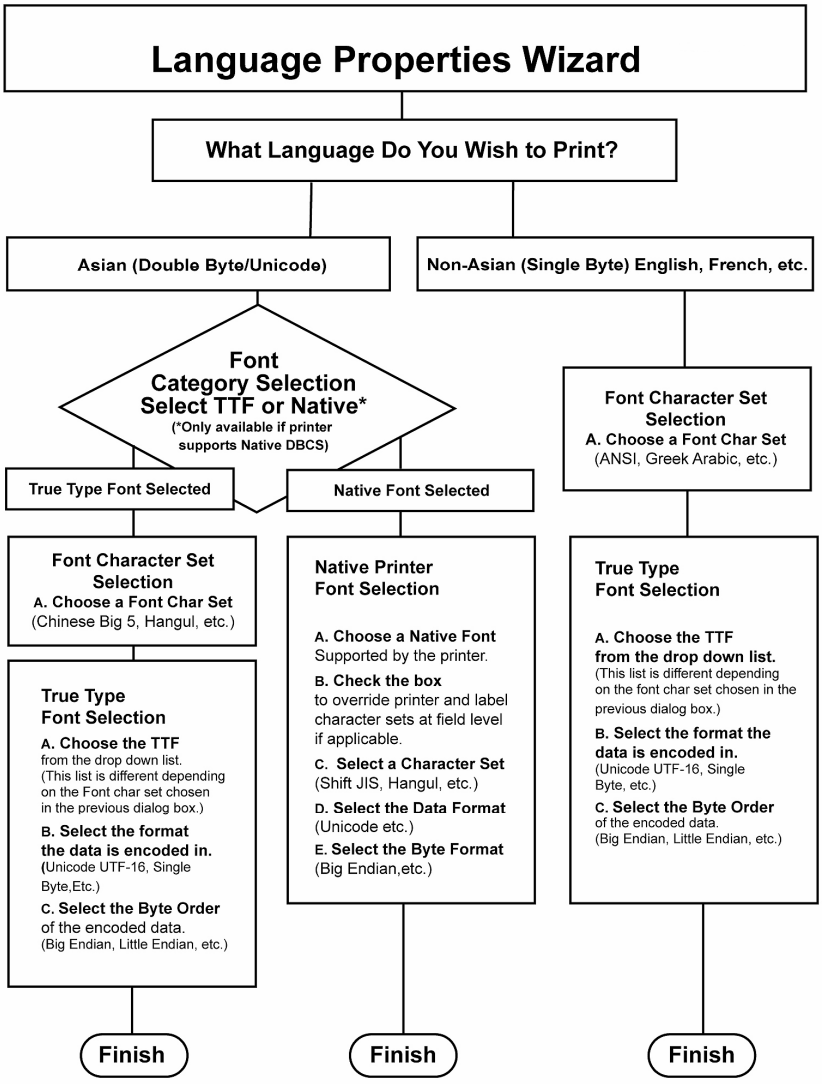
IBM ASCII Chart

Ctrl	Dec	Hex	Char	Code	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char
@	0	00	Null	NUL	32	20	SP	64	40	@	96	60	`
A	1	01	☺	SOH	33	21	!	65	41	A	97	61	a
B	2	02	☻	STX	34	22	"	66	42	B	98	62	b
C	3	03	♥	ETX	35	23	#	67	43	C	99	63	c
D	4	04	♦	EOT	36	24	$	68	44	D	100	64	d
E	5	05	♣	ENQ	37	25	%	69	45	E	101	65	e
F	6	06	♠	ACK	38	26	&	70	46	F	102	66	f
G	7	07	•	BEL	39	27	'	71	47	G	103	67	g
H	8	08	◘	BS	40	28	(	72	48	H	104	68	h
I	9	09	∩	HT	41	29	)	73	49	I	105	69	i
J	10	0a	◙	LF	42	2a	*	74	4a	J	106	6a	j
K	11	0b	♂	VT	43	2b	+	75	4b	K	107	6b	k
L	12	0c	♀	NP	44	2c	,	76	4c	L	106	6c	l
M	13	0d	♪	CR	45	2d	-	77	4d	M	109	6d	m
N	14	0e	♫	SO	46	2e	.	78	4e	N	110	6e	n
O	15	0f	☼	SI	47	2f	/	79	4f	O	111	6f	o
P	16	10	►	DLE	48	30	0	80	50	P	112	70	p
Q	17	11	◄	DC1	49	31	1	81	51	Q	113	71	q
R	18	12	↕	DC2	50	32	2	82	52	R	114	72	r
S	19	13	‼	DC3	51	33	3	83	53	S	115	73	s
T	20	14	₣	DC4	52	34	4	84	54	T	116	74	t
U	21	15	§	NAK	53	35	5	85	55	U	117	75	u
V	22	16	▬	SYN	54	36	6	86	56	V	118	76	v
W	23	17	↨	ETB	55	37	7	87	57	W	119	77	w
X	24	18	↑	CAN	56	38	8	88	58	X	120	78	x
Y	25	19	↓	EM	57	39	9	89	59	Y	121	79	y
Z	26	1a	→	SUB	58	3a	:	90	5a	Z	122	7a	z
[	27	1b	←	ESC	59	3b	;	91	5b	[	123	7b	{
/	28	1c	└	FS	60	3c	<	92	5c	\	124	7c	
]	29	1d	↔	GS	61	3d	=	93	5d	]	125	7d	}
•	30	1e	▲	RS	62	3e	>	94	5e	^	126	7e	~
_	31	1f	▼	US	63	3f	?	95	5f	_	127	7f	□

IBM ASCII Chart (Extended)

Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char
128	80	Ç	160	a0	á	192	c0	└	224	e0	α
129	81	ü	161	a1	í	193	c1	┴	225	e1	ß
130	82	é	162	a2	ó	194	c2	┬	226	e2	Γ
131	83	â	163	a3	ú	195	c3	├	227	e3	π
132	84	ä	164	a4	ñ	196	c4	─	228	e4	Σ
133	85	à	165	a5	Ñ	197	c5	┼	229	e5	σ
134	86	å	166	a6	ª	198	c6	╞	230	e6	µ
135	87	ç	167	a7	º	199	c7	╟	231	e7	τ
136	88	ê	168	a8	¿	200	c8	╚	232	e8	Φ
137	89	ë	169	a9	⌐	201	c9	╔	233	e9	Θ
138	8a	è	170	aa	¬	202	ca	╩	234	ea	Ω
139	8b	ï	171	ab	½	203	cb	╦	235	eb	δ
140	8c	î	172	ac	¼	204	cc	╠	236	ec	∞
141	8d	ì	173	ad	¡	205	cd	═	237	ed	φ
142	8e	Ä	174	ae	«	206	ce	╬	238	ee	ε
143	8f	Å	175	af	»	207	cf	╧	239	ef	∩
144	90	É	176	b0	░	208	d0	╨	240	f0	≡
145	91	æ	177	b1	▒	209	d1	╤	241	f1	±
146	92	Æ	178	b2	▓	210	d2	╥	242	f2	≥
147	93	ô	179	b3	│	211	d3	╙	243	f3	≤
148	94	ö	180	b4	┤	212	d4	╘	244	f4	⌠
149	95	ò	181	b5	╡	213	d5	╒	245	f5	⌡
150	96	û	182	b6	╢	214	d6	╓	246	f6	÷
151	97	ù	183	b7	╖	215	d7	╫	247	f7	≈
152	98	ÿ	184	b8	╕	216	d8	╪	248	f8	°
153	99	Ö	185	b9	╣	217	d9	┘	249	f9	∙
154	9a	Ü	186	ba	║	218	da	┌	250	fa	·
155	9b	¢	187	bb	╗	219	db	█	251	fb	√
156	9c	£	188	bc	╝	220	dc	▄	252	fc	ⁿ
157	9d	¥	189	bd	╜	221	dd	▌	253	fd	²
158	9e	Pts	190	be	╛	222	de	▐	254	fe	■
159	9f	*f*	191	bf	┐	223	df	▀	255	ff	

Language Properties Wizard Flowchart



Appendix D Upgrading and Importing

Upgrading from Previous Loftware Products

Upgrading from DOS

The LLM-DOS program was discontinued in 1995. Conversion of DOS labels in the Loftware Label Manager setup program was discontinued in 2000. You may still perform a single or multiple label import from the Loftware Label Manager design mode, but only with Version 4.2 or LESS. This method does not bring forward any database, serial number, image files or connections but converts your base labels. See the following section on importing and converting for instructions on how to do this.

Before performing the import:

- Any images you were using can still be used by copying their .img files from the LLMDOS directory to the 'Program Files\Loftware Labeling\Images directory.

After performing your import:

- Serial number files have to be recreated in Loftware Label Manager. Fields on your label have to have their data sources 'reattached' to the new serial files.
- If you are using a .dbf database, copy it to the 'Program Files\Loftware Labeling\dbases' directory and create an ODBC datasource that points to that directory. Any fields on your labels have to be re-attached to their corresponding fields in the database.

Note: It is too expensive to train our technicians in the old DOS technology. Therefore, as of January 2000, Loftware no longer supported the conversion of DOS labels to Windows Labels. However, if you have Loftware Version 4.2.2.24 or lower, you can upgrade to our Loftware Labeling (Windows-based) product by completing the instructions described below.

Upgrading From 16-Bit LLM-WIN (Full Edition)

Note: 16-bit LLM-WIN users upgrading to 32-bit receive a new Loftware 32-bit Hardware Key (Dongle). Remove the 16-bit key and replace it with the 32-bit key before installing. You must be a registered user of the 16-bit Loftware product in order to be eligible for an upgrade.

For users upgrading from the 16-bit LLM-WIN versions 1.xx to 2.xx, it is highly recommended that you choose the same directory location for installing the new Loftware Label Manager software (default location is C:\Loftware Labeling). Installing over your existing 16-bit LLM-WIN is recommended for four reasons:

1. If detected, the Loftware Label Manager installation program copies the contents of the 16-bit initialization file (LLMWDSGN.INI) to the new 32-bit .INI file (LLMWDN32.INI). Copying this file preserves the parameter settings previously used.

2. All label formats and settings come forward to the 32-bit product.

3. The 16-bit program .exe files are renamed with an .old extension.

4. If you choose to install the 32-bit software to a directory other than where the 16-bit software is installed, none of your preferences, printer configurations or labels is automatically brought forward. If you are an advanced user, it is a simple matter to copy your labels, serial number files and images to the new 32-bit directory. It is also simple to reconfigure your printers. If you want "plug and play" compatibility, install to the same directory as the 16-bit product.

Importing and Converting Labels

Loftware Label Manager gives you the flexibility of importing:

- LLM-DOS label formats including label specific options (LSO's)
- Printer specific data streams for Intermec IPL, Monarch MPCL, Zebra ZPL

LLM-DOS Label Conversion Program

Setup transfers your supporting label format files to the Loftware Label Manager directory (such as graphical images, serial files and databases). It does not transfer or convert label formats (.lab) and label specific setup options (.prm) files. Therefore, it is necessary to convert your label formats as follows:

1. **DOS Label Convert** is an icon in the program group (up to and including Version 4.2) that converts all of your labels **(.lab)** and setup **(.prm)** files. The original labels are left intact in their normal directories. Errors that occur during this process may be suppressed and written to **convert.log.** Users should "view" the log file before exiting the convert program.

2. **IMPORT…** is a choice in the File menu of the Label Design mode. It allows you to convert one LLM-DOS label or printer hardware data stream at a time.

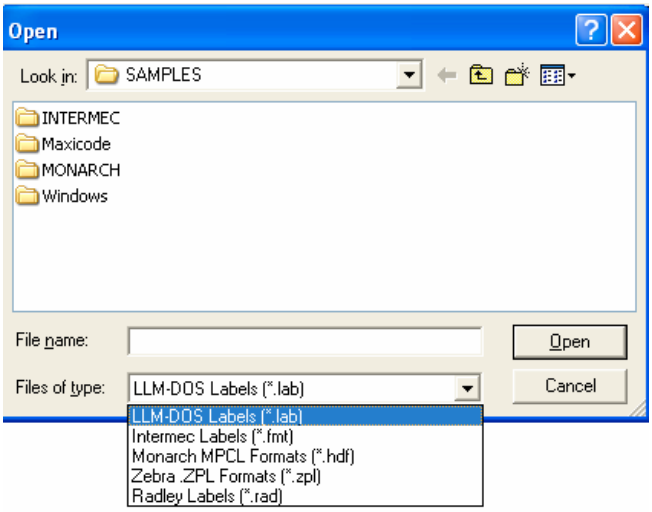


Figure D-A: Hardware data stream conversion options

Converting Printer Specific Hardware Data Streams

Hardware data streams for specific printer types (Intermec IPL, Monarch MPCL and Zebra ZPL) can be accurately imported directly into the Loftware Label Manager designer and merged to any supported printer type by using the **File | Import** menu option.

Alternatively, you can perform a "mass" convert of these data files by creating an icon or running the Loftware Label Manager designer with a special command line argument using these switches:

-e	Printer Type Data Extension
.LAB	(LLM-DOS label formats)
.FMT	(Intermec IPL data streams)
.HDF	(Monarch MPCL data streams)
.ZPL	(Zebra ZPL data streams)
-c	Originating Directory
.rad	Radley...Raduform

Example: "C:\Program Files\Loftware Labeling\LLMWDN32.EXE" -e.zpl -cc:\zebra\labels

When converting hardware specific data streams, you are asked to select the target printer and resolution.

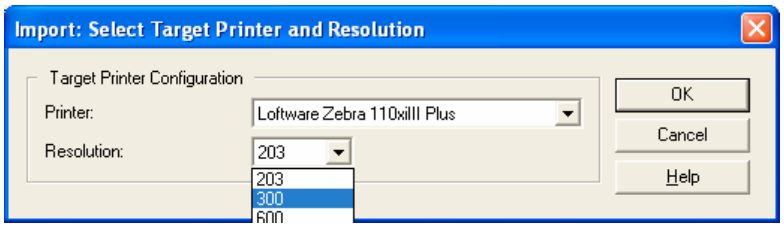


Figure D-B: Selecting the Target Printer and Resolution

Note: Loftware Label Manager does not convert graphical images embedded into these hardware data streams. An exception to this is the importing of LLM-DOS labels.

Conversion Log

There is a file called **CONVERT.LOG** located in the labels subdirectory of Loftware Label Manager. It contains a history of all the labels that have been imported along with any associated error messages. This is a flat file edited with any text editor such as Notepad or Edit. This file may contain important information regarding certain aspects of your label that may not have come forward in the conversion process.

Testing Converted Labels

You must test and possibly 'tweak' all of your converted labels before you go into production with Loftware Label Manager. Do not delete your LLM-DOS directory until you are confident that your system is working to specification.

Items Not Included in Import

Although the import feature handles almost every label setup configuration you have, it does not bring LLM-DOS System Settings forward.

For example, after importing, you must set your Printer Type, COM Port and any **Printer Specific Options** (PSOs) you may have. Examples of PSOs are Media Type, Baud Rate, and Retract Distance. Consult LLM-DOS if you are unsure of these settings. See the Creating a Label chapter of this Guide for information on setting these parameters.

Label Specific Options: (LSOs) such as Print Speed, Head Temperature and Media Sensitivity are handled by the importer.

Note: Make sure that none of your DOS label formats have variable field names with special characters such as "#, %. _. - in them. Also, make sure that any database names referenced by your labels do not contain "_".

Recovering from Import Errors

Generally, the importer uses a "best guess" approach to decide how to default a field with an error. For example, if your DOS label contains a Code 11 bar code, an error is logged and the field defaults to Code 39. You may then load the label into Loftware Label Manager and make any necessary adjustments. This method works for most import errors.

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